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ABSTRACT

This report describes the second-year results for an evaluation of the School Choice Scholarships Foundation (SCSF) program to award 1,300 scholarships so that children of low-income families in grades 1 through 4 in New York City public schools could transfer to private schools. Because the scholarships were awarded through a lottery, the evaluation allowed for the conduct of a randomized experiment in which students were randomly selected for a treatment (scholarship) group and a control group. As reported by parents, the schools attended by scholarship students were smaller than the schools attended by public school students. Private school parents were less likely to report serious problems such as fighting, absenteeism, and racial conflict at their children's schools. Students in private schools were asked to complete more homework than students in public schools. On standardized tests, students offered scholarships generally performed at about the same level as students in the control group. African American students offered scholarships scored about three points higher than similar students in the control group, and the impact of going to a private school for two years for African American students was four percentile points. No impact was seen for Latino students. Overall, findings suggested that the difference between the scholarship group and the control group remained about the same over the two years. About 62 percent of the students offered scholarships used them for two full years, and 12 percent used them in the first year but not the second. 24 percent of students offered the scholarships refused them. The most frequently cited obstacles that prevented parents from sending their children to the preferred school included cost (35 percent), transportation problems (14 percent), and lack of space at the school (10 percent). Findings show that 40 percent of parents who switched from public to private schools gave their schools an A; less than 10 percent of similar parents in the public schools gave their schools an A. Five appendixes contain discussions of baseline characteristics for the treatment and control groups, sample weights, the analytic approach, supplemental data, and estimates of ever attending a private school. (Contains 22 tables and 52 endnotes.) (SLD)

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School Choice in New York City After Two Years: An Evaluation of the School Choice Scholarships Program

Interim Report

August 2000

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School Choice in New York City After Two Years: An Evaluation of the School Choice Scholarships Program

Interim Report

August 2000

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EXECUTIVE SUMMARY

In 1997, the School Choice Scholarships Foundation (SCSF) announced that it would provide 1,300 scholarships so children of low-income families in grades K through four in New York City public schools could transfer to private schools. The scholarships were worth up to $1,400 annually and could be used for up to four years at both religious and secular schools. The SCSF received applications from more than 20,000 students between February and April 1997. From the pool of applicants, scholarship recipients were selected in a lottery held in May 1997.

In this report, we describe the second-year results for an evaluation of the SCSF program. The evaluation is based on a rigorous research design that takes advantage of the fact that the SCSF held a lottery. Accordingly, the evaluation allows for the conduct of a randomized experiment in which students were randomly selected for a treatment group (scholarship group) and a control group. The results are particularly relevant to the debate about the impacts of education vouchers on students and parents. Among the current voucher experiments, the SCSF program is the largest in terms of enrollment and shows results for the most diverse population of low-income students. Similar randomized field trials of school voucher interventions have been conducted in Dayton, Ohio, and Washington, D.C.

Key findings from the evaluation are as follows:

OUTCOMES

Impacts on School Facilities, School Climate, Parents' Satisfaction with Schools, and Parental Communication and Involvement

- As reported by parents, the schools attended by the scholarship students were smaller than the schools attended by the public school students (385 students versus 525 students) and class sizes were smaller (two fewer students in the private school classrooms). Private schools were less likely than public schools to have a library, nurse's office, child counselors, and special programs for non–English speakers and students with learning problems. In a few instances, private school parents reported more extensive facilities and programs, such as computer laboratories, music programs, and individual tutors. No differences were found concerning programs in art, programs for advanced learners, a gymnasium, and after-school programs.

- Compared with public school parents, private school parents were less likely to report the following serious problems at their school: students destroying property, tardiness, missing classes, fighting, cheating, and racial conflict. For example, 70 percent of the parents with a child in public school reported that fighting was a serious problem at their child's school, as compared to 33 percent of the parents with a child in private school.

- Students in private schools were asked to complete more homework than students in public schools. 64 percent of the parents of children in private school said their child had more than an hour of homework per day, as compared to 41 percent of the parents whose child attended a public school.

- Parents of students in private schools said that they received more communication from their school about their children than did parents in public schools.

- The level of parent involvement for parents with students in private schools was about the same as for parents with public school children.

- Compared with public school students, private school parents said their children were more likely to have received religious instruction outside of school, participated in church youth groups, and attended religious services.

- Parents who switched from public to private schools were much more satisfied with their schools than parents who remained in the public schools—for example, when asked to grade their schools, nearly 40 percent of the parents in the scholarship takers group gave their school an A and less than 10 percent of similar parents in the public schools gave their schools an A.

Impacts on Test Scores

- On standardized tests, students *offered* scholarships (24 percent never used a scholarship when offered) generally performed at about the same level as students in the control group. That is, using the Iowa Test of Basic Skills to assess students' performance in reading and mathematics, we found that, overall, students in the scholarship group performed at about the same level as did students in the control group. The same results hold for students who shifted from a public school to a private school.

- To see whether the voucher intervention affected the often reported test-score gap between whites and minority students, results were examined for Latinos and African Americans separately. African American students make up about 45 percent of the sample and Latino students about 46 percent. The pattern of impacts for Latino and African American students is inconsistent. We find no impact for Latinos. We find a significant average impact on the composite test scores for African American students. African American students offered scholarships scored about 3 points higher than similar students in the control group. The impact of going to a private school for two years for African American students was 4 percentile points.

- Much of the overall impact of a voucher on African American students' achievement is concentrated among those students who were in 6th grade. The impact for sixth graders is statistically significant and large; the impacts of a voucher on African American students' achievement in grades 3-5 are much smaller and not statistically significant.

- A comparison of the first- and second-year results for African Americans showed similarly sized impacts. In the first year, the overall impact of a voucher *offer* on reading for African American students was 3.5 percentile points and for the second year 3.4 percentile points; this difference is not statistically significant. For mathematics, there was a slight decline in impacts—from 5.4 to 3.1 points; that decline is also not statistically significant. Taken together, these findings suggest that the difference between the scholarship group and the control group remained about the same over the two years. Similar to the findings for African Americans, there were no significant changes for Latino students between year one and year two.

PARTICIPATION IN THE SCSF PROGRAM

- About 62 percent of the students offered scholarships used the scholarship for two full years, 12 percent used them in just the first year and not the second year, 2 percent used them only in the second year, and 24 percent never used them.

- Students who used the scholarships were generally similar to nonusers, but there were some differences. Baseline test scores were similar for scholarship takers and decliners; households of scholarship takers and decliners were equally likely to speak English as their main language; and mothers of takers and decliners were equally likely to have been born in the United States. Scholarship decliners were somewhat less likely than scholarship takers to have received special education services before the baseline testing session; mothers of scholarship takers had somewhat higher educational attainment than the mothers of the decliners; and scholarship takers lived in families with higher incomes than scholarship decliners (about $2,700 higher; the average income for takers was about $10,400).

- The most frequently cited obstacles that prevented parents from sending their children to the preferred school included cost (35 percent), transportation problems (14 percent), and lack of space at the school (10 percent).

- According to parental reports, the percentage of students attending school throughout the school year was similar for those attending public and private school. Similarly, the percentage of students who plan to attend the same school the next year was similar for the two groups, except that public school students were more likely to graduate from one school level to the next (private schools are more likely to have all grades K-8 within one school). Virtually no parents reported their child had been expelled from school. Suspension rates for students in public and private school were similar.

THE EVALUATION

The evaluation of the SCSF program in New York City presents a unique opportunity to examine the impact of educational vouchers on student and parent outcomes for students switching to private schools. New York City has a diverse population and is the nation's largest school system. We computed the effects of vouchers on education outcomes by using a

randomized experimental design that allows us to compare two statistically equivalent groups of students and, in turn, to isolate the unique effect of vouchers on the measured outcomes.

Mathematica Policy Research has collected data three times on the same students and families since 1997 (1997, 1998, and 1999). We have just completed collecting a forth round of data and will report the results early in 2001. Each time we collected data, students were given the Iowa Test of Basic skills to measure their academic achievement in reading and mathematics. In addition, parents and students completed surveys in each of the three years so that we could learn more about their educational experiences and plans. The response rate for each test administration was moderately high—100, 78, and 65 percent in 1997, 1998, and 1999, respectively. Somewhat higher response rates were achieved for the parent and student surveys than for the achievement tests.

SCHOOL CHOICE IN NEW YORK CITY AFTER TWO YEARS: AN EVALUATION OF THE SCHOOL CHOICE SCHOLARSHIPS PROGRAM

Over the past few years, Congress and many state legislatures have introduced school voucher proposals. At the same time, three publicly—funded programs are currently in operation in Milwaukee, Cleveland, and Florida.[1] A larger number of privately funded voucher programs have also been funded—in New York City; Washington, D.C.; Dayton, Ohio; San Antonio, Texas; Indianapolis, Indiana; and San Francisco, California as well as in a nationwide program.[2]

In this report, we seek to add to the growing body of knowledge about the workings of school voucher programs by reporting the results from the second year of the operation of the voucher program serving students who had previously been attending New York City public schools. Begun in 1996 by the School Choice Scholarships Foundation (SCSF), this privately funded voucher program was designed to allow for the collection of high-quality information about student test-score outcomes and parental assessments of public and private schools. Taking advantage of the fact that scholarships were awarded by lottery, the evaluation was designed as a randomized field trial. Before conduct of the lottery, the evaluation team collected baseline data on test scores and family background characteristics.[3] The evaluation is continuing, with results from the second year of the pilot program contained in this report.

Many interest groups, political leaders, and policy analysts have debated the desirability of continuing and expanding school choice programs.[4] Unfortunately, high-quality information that might inform this debate is limited. Although many studies comparing public and private schools have been published, they have come under criticism for comparing dissimilar populations. Even when statistical adjustments are made, it remains unclear whether findings

actually describe differences between public and private schools or simply differences in the types of students and families attending them.[5]

The best way to make sure that two populations are similar is to assign individuals randomly to treatment and control groups. Random assignment has been used recently in a number of educational studies, such as the Tennessee Star study that found that smaller classes had positive effects among students in kindergarten and first grade.[6] Another example of random selection of students to treatment and control groups is the national evaluation of Upward Bound, which is funded by the U.S. Department of Education.[7] Until recently, random assignment had not been used carefully to study the question of school choice.

The SCSF program provides an opportunity to estimate the impacts of a school choice pilot program with the following characteristics:

- a lottery that allocated scholarships randomly to applicants;
- a lottery that was administered by an independent evaluation team;
- collection of baseline data on student test performance and family background characteristics from a high percent of the students and their families before the lottery; and
- data on a broad range of characteristics of parents and students collected from a reasonably high percent of the treatment and control groups two years after the beginning of the intervention.

In this report, we provide information about the SCSF program two years after students started using their school-choice scholarships. Similar reports are planned for at least one more year of the program. In the remainder of this report, we describe the program sponsored by the SCSF; the data collection, analysis, and reporting procedures followed by the evaluation team; and detailed findings from the evaluation for the first year of the program.

DESCRIPTION OF THE SCHOOL CHOICE SCHOLARSHIPS FOUNDATION PROGRAM

In February 1997, SCSF announced that it would provide 1,300 scholarships worth up to $1,400 annually for at least three years to children from low-income families currently attending public schools. The scholarship could be applied toward the cost of attending a private school, either religious or secular. After announcement of the program, SCSF received initial application forms from over 20,000 students between February and late April 1997.

To be eligible for a scholarship, children had to be entering grades one through five, live in New York City, attend a public school at the time of application, and come from families with incomes that qualified them for the U.S. government's free school lunch program. To ascertain eligibility, students and an adult member of their family were asked to attend verification sessions during which family income and the child's public-school attendance were documented.

Because many more families applied for scholarships than originally projected, we randomly selected families for scholarships through a two-stage procedure. As families applied for scholarships, they were organized into groups on the basis of their application date. During the early stages, all families were invited to eligibility assessment and data-collection sessions. However, after it became clear that more families would be attending the sessions than could be accommodated, we began randomly selecting applicants, inviting only those selected to attend the sessions. After the first stage was completed, families who attended the sessions and met the eligibility requirements were then randomly selected for the scholarship or control group. To ensure that all families from the different sessions had the same chance of selection for the scholarship group, we adjusted the second-stage selection probabilities to reflect the differential chances of being invited to the verification sessions.

The final lottery was held in mid-May 1997. Mathematica Policy Research (MPR) administered the lottery; SCSF announced the winners. Within the parameters established by SCSF, all applicants had an equal chance of winning the lottery. SCSF decided in advance to allocate 85 percent of the scholarships to applicants from public schools whose average test scores were less than the citywide median. Consequently, applicants from these schools, who represented about 70 percent of all applicants, were assigned a higher probability of winning a scholarship. In the information reported in the tables, results have been adjusted by weighting cases differentially so that they can be generalized to all eligible applicants who would have attended the verification sessions had they been invited regardless of whether they attended a low-performing school. Subsequent to the lottery, SCSF assisted families in finding private school placements.

EVALUATION PROCEDURES

The evaluation procedures used for the second follow-up data collection were similar to those used during the baseline and first follow-up. Below, we describe these procedures in greater detail and present response rates for each of the data-collection components.

Collection of Baseline Data

During the eligibility verification sessions, students were asked to take the Iowa Test of Basic Skills (ITBS) in reading and mathematics. Students in kindergarten applying for a scholarship for first grade were exempted from this requirement. Parents were asked to fill out questionnaires reporting information on their satisfaction with the school their child was currently attending, their involvement in their child's education, and their demographic characteristics. These sessions took place during March, April, and early May 1997 on Saturday mornings and on vacation days. The sessions were held at private schools, where students could

take tests in a classroom setting. In most cases, private school teachers served as proctors under the overall supervision of the staff of MPR.

While the child was taking a test that took more than an hour, the adult accompanying the child to the testing session responded to the questionnaire in a separate room. This procedure had the advantage of giving administrators the opportunity to stress that responses to the questionnaire would be held in strict confidence and used for statistical purposes only. It also provided respondents with the time to complete the questionnaire at a leisurely pace and the opportunity to ask any questions concerning the meaning of particular questions. Questionnaires were available in both English and Spanish.

Given the likelihood that a variety of caretakers might be accompanying children, questions were designed to allow any caretaker familiar with the child's school experiences to respond to the questions. Although grandmothers and other relatives and guardians also filled out the questionnaire, in over 90 percent of the cases one of the parents answered the questions. The remainder of the report, for ease of presentation, refers to opinions expressed as those of parents.

Because scholarships were allocated by a lottery, there were few differences between those students offered scholarships and those who were not (see Appendix A). Those scholarship recipients who made use of the scholarship were more educated and somewhat less disadvantaged in other respects than those who did not make use of the scholarship; however, those making use of the scholarship were more likely to be African American. Baseline test scores did not differ significantly between those using the scholarship and those who did not.[8]

Collection of Second-Year Follow-Up Information

To evaluate the effects of the scholarship on students and their families, MPR constructed two statistically equivalent groups of families: (1) a scholarship group with 1,000 families and

(2) a control group with 960 families. Procedures used to construct the two groups and to collect first-year follow-up information and the results from the evaluation of the first year of the program are described elsewhere.[9] For the second-year follow-up, families were invited in April, May, and June 1998 to attend sessions during which students again took the ITBS in mathematics and reading. Adult members of the students' families completed surveys that asked a wide range of questions about the educational experiences of their oldest child within the age range eligible for a scholarship. Students in grades three through six were also asked to complete short questionnaires.

Testing and questionnaire administration procedures were similar to those followed during the baseline and first-year follow-up sessions. Both the scholarship students and students in the control group were tested in locations other than the school they were currently attending.

Response rates for the second follow-up survey and test, along with response rates for the baseline and first follow-up surveys and test administrations are shown in Table 1. We present results separately for the treatment and control groups and distinguish between students who did not attend testing sessions and those who completed too few items on the reading and mathematics tests to be scored by the test publisher, Riverside Publishing. Seventy-four percent of the families selected for inclusion in the evaluation participated in the sessions held in spring 1998. This fairly high response rate was achieved in part because SCSF conditioned the renewal of scholarships on participation in the evaluation; nonscholarship winners selected to become members of the control group were compensated for their expenses and told that they could automatically reapply for a new lottery if they participated in the follow-up sessions.

As seen in Table 1, the participation rate was fairly similar for treatment and control groups: 75 percent of the families offered scholarships participated in the evaluation compared with 72

percent of the families in the control group. Sixty-five percent of the students participating in the evaluation attended the testing session, including 69 percent of those offered scholarships compared with 60 percent of the students in the control group. Seventy-nine percent of the students were scored on the baseline reading test and 73 percent on the mathematics test. The percent of completed student tests is less than the family survey response rates because some students did not complete a sufficient number of items to have their tests scored. Incomplete tests could have resulted for a variety of reasons. For example, some students had never taken a standardized test before we administered one to them and found the experience overwhelming; these students were dismissed from the testing session. A few other students decided for one reason or another that they did not want to complete the test items. In a few cases, the test proctors took too long to administer the tests and that the session concluded before the children had time to complete a section of the test.

Although the background characteristics of participants and nonparticipants in the second-year follow-up, as observed in the baseline survey conducted in 1997, resembled one another in most respects, they differed significantly in some (see Appendix A). Among the treatment group, participants were less likely to be white, less likely to be black, and more likely to be Hispanic other than Puerto Rican. Mothers were more likely to be born outside the United States, more likely to have lived in the same residence, less likely to be working, more likely to state their religious affiliation as Catholic, and less likely to use food stamps or welfare. They originally reported an average income of around $9,900 compared with $8,500 for nonparticipants. They were less likely to speak English at home. The student was less likely to have been in third grade at the time of the initial application for a scholarship.

Members of the control group who participated in the second-year follow-up were less likely than nonparticipants to be black and more likely to be Hispanic other than Puerto Rican. They were more likely to report that their child had received help for a disability. They were more likely to note a Catholic religious affiliation. They were more likely to be receiving supplemental security income and less likely to speak English at home. Students were more likely to have been first graders at the time of the initial application for a scholarship.

To adjust for survey nonresponse in our statistical analyses, we use an analytic model to predict nonresponse based on a variety of background characteristics. The predicted probability of not responding is then used to adjust the sample weights. A more detailed discussion of this procedure is described in Appendix B.[10]

Data Analysis and Reporting Procedures

The analysis of the data from the second-year evaluation of the SCSF program takes advantage of the fact that a lottery was used to award scholarships. As a result, it is possible to compare two groups of students that were similar, on average, in almost all respects except that the members of the control group were not offered a scholarship.

This report provides data that help answer the following two questions, both of which have clear policy implications:

1. What was the impact of the *offer* of a SCSF scholarship to a group of low-income scholarship applicants, as measured by test scores and as perceived by the applicants themselves?
2. What was the impact of attending a private school?

The analytical techniques needed to answer each question differ in important ways. The first question can be answered straightforwardly by comparing the responses of those who were

offered a scholarship with the responses of the control group. To compute the impact of a scholarship offer on children's test scores, we estimated statistical models that take into account whether a student was offered a scholarship as well as baseline reading and mathematics test scores and variables that define the randomization process. Baseline test scores were included to adjust for chance differences between the scores of treatment- and control-group members on the achievement tests and to increase the precision of the estimated impacts. We used a similar approach to compute the impacts of the program on the parent and student survey responses. In equations predicting parent and student responses, we did not, however, include baseline data, other than a treatment indicator and variables used to define the randomization process.[11]

To compute the effects of going to a private school on students' test scores, a statistical model was estimated that took into account test scores and variables used to define the randomization process as well as whether students attended a private or a public school. To compute program impacts on parent and student survey items, we used a similar approach; however, we did not include the baseline test scores to predict parent and student responses.

The Appendix presents a detailed description of the model estimation procedures and procedures used to compare results from year 1 with year 2 are presented in the Appendix C.

The answer to the first question—the impact of an offer of a scholarship--is provided in column three of many of the tables in the main body of the report. It is the difference between column one, the response of those offered a scholarship, and column two, the response of those not offered a scholarship. The answer to the second question, the impact of going private, is provided in column six. It is the difference between the estimated response of those attending a private school in columns four and five, which provide an estimate of the response of the appropriate control group.

For some policy analysts, the first question is the crucial policy question: What happens when a school choice program is put into effect? What are the impacts on the population of low-income families interested in a school-choice scholarship? This is similar to a question often asked in medical research: What will happen if a particular pill is marketed? How will the health of potential users be altered whether or not all patients use the pill as prescribed?

For other analysts, the second question is critical because it tells us about the potential impacts of attending private instead of public schools. They want to know what are the consequences of actually attending a private school and not just whether an offer was made. More exactly, analysts want to know what difference it makes whether low-income, inner-city families attend a public or a private school. In medical research, the parallel question is: What are the consequences of actually taking a pill as prescribed?

In short, when we provide information that answers the two questions enumerated above, we present the information in six columns as follows:

1. Response of all those offered a scholarship;
2. Response of those not offered a scholarship;
3. Estimated impact of being offered a scholarship;
4. Responses of all those who attended private school;
5. Estimated response of those in appropriate control group; and
6. Estimated impact of attending a private school.

A CONTEXT FOR INTERPRETING PROGRAM IMPACTS

Response Bias

The interpretation of data from the parental and student surveys in New York City needs to take into account parents and students exaggerating their responses to some items, such as satisfaction with their schools, time spent on homework, or educational expectations. No special weight should be placed on the actual frequency with which any particular type of event is said

to take place. For example, one should not take too seriously the claim by children in third through fifth grades that they spend, on average, approximately one hour and 20 minutes a day on their homework.

But if absolute levels may not be estimated accurately, there is no reason to believe that the two groups of parents—scholarship recipients and members of the control group—differ in the accuracy of their reports. After all, individuals were assigned randomly to the two groups, and any reporting bias should be similar for the two groups.

Thus, this report will, for the most part, interpret differences between groups rather than the absolute value obtained by any one group.

Generalization of Findings

It is essential to qualify any generalizations from the results of this pilot program to a large-scale voucher program that would involve all children in New York City or other central cities. Only a small fraction of low-income students in New York City public schools were offered scholarships, and they constituted only a small proportion of the students attending New York private schools. The impact of a much larger program could conceivably have different program outcomes.

Although one cannot generalize the findings to programs that involve many or all students within a school district, the results from an evaluation of the SCSF program may permit estimation of the likely impact of a small-scale publicly funded voucher program serving low-income families. Earlier research indicates only modest differences in the family background characteristics of those eligible to receive an SCSF scholarship and actual scholarship applicants.[12] No significant difference was observed in the income of applicants compared with the income of eligible population. Fathers' employment rates were similar. In addition, the

residential mobility of the applicant population was about the same as among the eligible population. And applicant mothers were only slightly more likely to be foreign born than mothers in the eligible population.

In some ways, applicants seem to have been more disadvantaged than eligibles. Applicants were more likely to be dependent on government assistance for income. In addition, the applicant population was less likely to be non–Hispanic white and more likely to be African American. At the same time, however, other findings point in the opposite direction. Mothers and fathers are considerably more likely to have some college education; English was more likely to be the language spoken in the household; and mothers were more likely to be employed either full or part-time.

Furthermore, any voucher program directed at low-income families is likely to attract initially those families with the greatest interest in exploring an educational alternative, precisely the group that applied for an SCSF scholarship. Because such a group may be more select, it is not known whether the results from the evaluation would generalize to those families who might later apply for scholarships.

SCSF Program Participation and Members of the Control Group Attending Private Schools

The number of children who took advantage of a scholarship offer is an important factor in interpreting the impacts of a scholarship offer because it provides some indication of the strength of treatment. Before the 1997–1998 school year, SCSF offered scholarships to 1,374 children. By the end of the second year, about 64 percent of these children were using a scholarship: 62 percent of the children had used a scholarship for two full years, 12 percent used one just in the first year, and 2 percent used a scholarship only in the second year. Most families who decided not to use a scholarship based their decision on financial reasons, recognizing that the $1,400

scholarship does not cover the full cost of tuition. (Later in this report, we provide a more detailed analysis of the reasons given by parents for both selecting specific schools and leaving the program.)

Besides taking into account the number of students in the treatment group who used their scholarships, one also must consider the behaviors of the control group; that is, to what extent did families in the control group send their children to private schools. Starting with the first follow-up survey, we asked parents in the control group whether their children were attending a private school. We discovered that about 8 percent of all children in the control group were reported as attending a private school for at least one year: 4 percent attended both years and 4 percent attended for one year.

If all children randomly assigned to the scholarship group had attended a private school and all children in the control group had attended a public school, then the treatment differential would have been 100 percentage points. The private school attendance patterns of the treatment and control groups suggest that the treatment differential is about 58 to 64 percentage points.[13] The estimated impact of a scholarship offer takes into account both the impact on those who use the scholarship, and the proportion of those offered the scholarship who do not make use of it, and the proportion of the control group that attended a private school. In other words, observed effects of being offered a scholarship are approximately 60 percent of the actual effects of attending a private school because only 60 percent of those offered the scholarship complied with the protocols. For this reason, in the pages and tables that follow, the estimated impacts of actual attendance at a private school are always substantially larger than the estimated impacts of a scholarship offer.

Participation in Scholarship Program

An important issue in the school-choice debate concerns the composition of those who would leave public schools if school vouchers were made generally available. Critics of school choice have argued that choice programs do not give low-income families a viable choice of schools. In the words of educational sociologist Amy Wells, "White and higher-SES [socioeconomic status] families will no doubt be in a position to take greater advantage of the educational market."[14] The president of the American Federation of Teachers (AFT), Sandra Feldman, has claimed that vouchers for private schools take "money away from inner city schools so a few selected children can get vouchers to attend private schools, while the majority of equally deserving kids, who remain in the public schools, are ignored."[15] But the first-year evaluation of the SCSF program, as well as the evaluation of other voucher programs in Cleveland and San Antonio, indicated that those who made use of a voucher did not differ sharply from those who did not.[16]

Still, these were initial results after one year. Even if voucher programs are only modestly selective in the initial year, does a significant degree of selectivity become apparent after two years?

Given that 62 percent of those offered a scholarship used the scholarship for two full years, that 12 percent used it in just the first year, and that 2 percent used the scholarship only in the second year, it is now possible to ascertain the degree of selection after two years by comparing the initial characteristics--as observed at baseline--of those using the scholarship two years later with the characteristics of those offered scholarships but not using them two years later. As seen in Table 2, little selection on education criteria had taken place by the end of the second year. Those offered a scholarship showed no significant initial test-score differences compared with those who made use of the scholarship. For those still making use of the scholarships two years

later, initial reading scores collected during the 1997 baseline testing session averaged only a 23 national percentile point ranking (NPR), the same as those not making use of the scholarship two years later. For mathematics, the difference was only one NPR, not a statistically significant difference. Those who did not make use of the scholarship were slightly more likely to have received special education services before the baseline testing session--the difference was 4 percentage points—14 percent of the decliners compared with 10 percent of those still making use of the scholarship two years later. In addition, households of scholarship takers and decliners were equally likely to use English as their main language. Mothers of decliners were also no less likely to have been born in the United States.

Demographically, other differences were apparent. For example, mothers of students remaining in the scholarship program two years later were more likely to have more than a high school education. In particular, 57 percent of mothers of children using the scholarship had more than a high school education compared with 48 percent of mothers whose children did not use the scholarship. Those who took advantage of the scholarship were also more likely to have lived at their current residence for two years or more.

Economically, scholarship users were in better circumstances than nonusers. The reported family income of scholarship takers was about $2,700 higher. Mothers were more likely to be working full time, less likely to be on welfare. Takers were also somewhat more likely to be Catholic—54 percent of scholarship users compared with 46 percent of the nonusers.

While some who declined the scholarship may have done so because they decided that the public schools better suited their needs, most parents felt otherwise. During the second year of the study, only 48 percent of those who declined the scholarship, compared with 88 percent of the scholarship participants, reported that their children attended a school they preferred. The

most frequently cited obstacles to sending children to a preferred school included cost (35 percent), transportation problems (14 percent), and lack of space at the school (10 percent). That cost was cited most frequently is not surprising given that the $1,400 voucher does not cover the full tuition and expenses at private or parochial schools. The median tuition, according to those attending private schools, was $2,000, and the median additional expenses for uniforms, school activities, books, supplies, and related items was $500. Therefore, most families who accepted an SCSF scholarship needed to find approximately $1,100 per child in supplemental funds.[17]

Still, we are left with the question of where scholarship families obtained additional resources. After the first year, we asked scholarship parents how they paid the tuition and additional expenses, inviting them to list more than one source of revenue, if appropriate. The most frequently mentioned source of funds was family income (34 percent of the scholarship users). Twenty-two percent of the families that used a scholarship in the first year said their child had received a school scholarship, and 5 percent said the school paid for some or, in a few cases, all of the tuition. Sixteen percent of the respondents said that relatives and friends helped out. Only 4 percent said they paid for tuition by donating time and fund-raising support to the school.

Selecting a School

Voucher critics often disagree with proponents of school choice about the importance of educational considerations in the selection of the school. Critics argue that low-income families are more concerned about location, sports programs, or religious instruction than about academic quality per se. For example, the Carnegie Foundation for the Advancement of Teaching has claimed that "when parents do select another school, academic concerns often are not central to the decision."[18] Similarly, an American Federation of Teachers's report on the Cleveland voucher program suggests that parents sought scholarships not because of "'failing' public

schools" but "for religious reasons or because they already had a child attending the same school."[19, 20] Disputing these contentions, supporters of school choice claim that low-income parents, like other parents, place the highest priority on the educational quality of the school.

Parents were asked to select the three most important among a list of considerations they may have had in mind when selecting a school. Of those parents who took advantage of the scholarship, they most frequently mentioned academic quality (listed by nearly 60 percent of the parents; Table 3) while other considerations included school discipline (42 percent of parents), safety (36 percent), and teacher quality (35 percent). A little over a quarter listed religious instruction and what is taught in class. Twenty percent mentioned class size and a convenient location. Considerations mentioned by only a small fraction of the parents included the school facilities, the sports program, and the school attended by the child's friends.

In sum, educational considerations seemed predominant, questions of social order (discipline and safety) secondary, and religious instruction of tertiary importance.

Obtaining the School of Choice

If offered a scholarship, parents were more likely to send their children to a school they preferred. Nearly 80 percent of those offered a scholarship reported success in finding a school they wanted compared with 56 percent of the control group (Table 4).[21]

Parents who did not obtain the school of their choice were asked to identify why they suspected that their choice went unfulfilled. Parents could list more than one reason if they so wished. By reducing the cost of attending a private school, the scholarship reduced from 31 to 12 percent the proportion of parents who said they could not afford their preferred school (Table 4). The cost issue notwithstanding, parents most frequently mentioned the following impediments (in order of frequency): no space available (5 percent of the parents); applied too late;

transportation problems; child not given space; school location; child failed the admission test; family did not share the school's religious affiliation; and the family moved away from the school.

Experiences in School

The type of school experience a child will enjoy as the result of a voucher intervention has been a matter of considerable debate. Choice critics say that public schools have better facilities and more elaborate programs capable of serving a diverse population[22] and that choice will lead to ethnic and racial segregation.[22] Choice supporters claim that private schools have the necessary facilities and do a better job of incorporating all children into a common framework and that the private sector is more integrated than the public sector.[23] Critics say that many private schools do not give students the necessary freedom to develop broadly while supporters say that privately run schools are more orderly, making it easier for children to learn.

To address these issues, we provide information on school facilities, programs, ethnic composition, and the disciplinary climate in public and private schools.

School Facilities. Most observers expect to find in central-city public schools larger, more expensive, more complex, and more sophisticated facilities than are available in central-city private schools. With a few exceptions, reports from applicant parents in New York City are consistent with the conventional wisdom.

First of all, public schools are larger. As estimated by parents, the effect of choosing the private sector was to reduce the average size of the school by 140 students or over 25 percent—from an average of 525 students to 385 students (Table 5).[24] This estimate of the impact of the program is almost exactly the same as parents provided one year earlier as part of the first-year evaluation.[25]

Private schools were also less likely to have a library, a nurse's office, child counselors, and special programs for non–English speakers and students with learning problems. The greatest difference was for programs for non–English speaking students. Forty-four percent of the private-school parents reported such a program in their school compared with 80 percent of the control-group parents. Most other differences were not as large; for example, 58 percent of the private-school families reported that their school had a program for the learning disabled compared with 74 percent of the parents in the control group (Table 5).

In a few instances, private-school parents reported more extensive facilities and programs. For example, they were somewhat more likely to say their school had a computer laboratory, a music program, and individual tutors. In other cases such as programs in arts, programs for advanced learners, a gymnasium, and after-school programs, no differences between the two groups were evident. The reports from parents concerning school facilities were similar to those reported at the end of the first year.[26]

As at the end of the first year in the program, private-school parents reported at the end of the second year that their children had been in smaller classes.[27] The effect of using a scholarship was to reduce the size of the child's class by two students (Table 5).

In sum, classes and schools are smaller in the private sector, but public schools offer a wider range of facilities and programs. The larger, more complex facilities do not, however, seem to satisfy the parents who applied for scholarships. On the contrary, approximately 33 percent of those with students in private schools were very satisfied with school facilities compared with 5 percent of the parents in the control group (Table 5).

Ethnic Composition of School. Shifting to a private school in New York City somewhat reduced the racial isolation of minority students. Parents were asked, "What percentage of the students in this child's classroom are minority?" To this question, 38 percent of control- group members replied that everyone in the classroom was of minority background (Table 6). Only 30 percent of the private-school parents gave the same response. The results are similar to those reported in the first-year evaluation.[28]

Special Education. In the debate over school choice, special education has received a good deal of attention. Critics of school choice say that private schools ignore the needs of those with physical and mental disabilities.[29] Defenders of school choice often claim that many of those diagnosed as disabled can learn in regular classrooms and that special arrangements can be made for others.

To illuminate this question, parents were asked about their child's special education needs and the availability of school programs to meet those needs. The number of learning disabled and physically disabled students in this evaluation was small, however; as a result, the differences in parents' assessments of school performance, though fairly large, are not statistically significant. Nonetheless, given that the differences are fairly large, they are worth reporting but should be interpreted with caution.

Only 4 percent of those offered a scholarship said that their child had a physical disability, and just 10 percent said their child had learning difficulties (Table 7). Of those with learning disabilities, scholarship users were more likely to say that the facility met the child's needs very well. Specifically, nearly 26 percent of the private-school parents said that the schools were meeting the learning needs very well compared with 16 percent of the control-group parents. However, parents of public-school students with physical disabilities were more likely to say that

their school met students' needs. Sixty-two percent of the public-school parents, but only 33 percent of those with a child in private school, reported that the school did "very well" at meeting their child's needs.

In sum, it seems that private schools may be better able to meet the needs of the learning disabled while public schools command the facilities and resources for better meeting the needs of the physically disabled. Given the small numbers involved, the findings are tentative.

School Climate. If parent reports are accurate, the scholarship program had a major impact on the daily life of students at school. Private-school parents were more likely to report that the following were *not* a serious problem at their school: students destroying property, tardiness, missing classes, fighting, cheating, and racial conflict. For example, 33 percent of the private-school parents thought that fighting was a serious problem at their school versus 70 percent of the control group (Table 8). The percents perceiving tardiness as a problem were 33 for the scholarship users and 62 for the control group. Less than 30 percent of private-school parents but 45 percent of the control group said that destruction of property was a serious problem at their school. The results are similar to those reported in the first-year evaluation.[30]

Although student reports of the climate in their school and classroom are not as sharply differentiated as those of parents, they are consistent with parental assessments. As seen in Table 9, students in private school were more likely than the control- group students to report that students "get along with teachers" and are less likely to say that "teachers ignore cheating" or that "there is a lot of cheating in this school." They were also more likely to report that they had close friends who "got good grades" and less likely to report friends who "use bad language."

As reported in the first-year evaluation report, public and private schools seem to use different control mechanisms for maintaining discipline.[31] Private schools seem to emphasize dress and orderliness; public schools rely on rules and regulations. Almost all private schools seem to require students to wear a school uniform. No less than 96 percent of the parents reported that their private school required uniforms compared with 43 percent of the parents in the control group (Table 8). Similarly, 95 percent of the private-school parents reported that certain types of clothing are forbidden, but less than two-thirds of the control group do. On the other hand, parents report that public schools more frequently employ sign-in sheets and hall passes. Ninety-five percent of the control group reported that parents must sign-in when they come to school, but just 86 percent of the private-school parents reported such a regulation. To leave their class, control-group students must obtain a hall pass, according to about 86 percent of the control-group parents, but only about 74 percent of the private-school parents mentioned a similar requirement.

Homework

After two years, parents continue to say that students in private schools are asked to do more homework.[32] Sixty-four percent of private-school parents reported that their child had at least an hour of homework a day, whereas only 41 percent of the control-group parents reported a similar volume of homework (Table 10). Private-school parents were also less likely to say the homework was too easy. Twenty percent of the control-group parents gave the same response compared with 4 percent of private-school parents.

Student assessments of their homework were not as sharply differentiated as those of parents, but the differences were in the same direction. Students attending private school

estimated that they spent, on average, 51 minutes per typical night on homework compared with a 44-minute estimate reported by control-group members (Table 10).

In one respect, student reports concerning homework differ significantly between the first and second years. After one year, students new to private schools were more likely than control-group students to report difficulty in keeping up with their homework.[33] After two years, the difference was no longer apparent (Table 10). Students were adjusting to the homework expectations of their new school, or the school was adjusting to the new students.

School Communications with Parents

Compared with control-group parents, parents of students in private schools said that they received more communication from their school about their child. Responses to questions about parent-school communications were very similar to those reported in the first-year evaluation.[34] Although no significant differences in the frequency of parents' nights were reported, the data presented in Table 11 indicate that a higher percent of private-school parents versus control-group parents reported

- being more informed about student grades halfway through the grading period;
- being notified when their child is sent to the office the first time for disruptive behavior;
- parents speaking to classes about their jobs;
- regular parent-teacher conferences;
- parents participating in instruction;
- parents receiving notes about their child from the teacher;

- parents receiving a newsletter about what is going on in school; and
- regular parent-teacher conferences.

The largest differences in school communication practices involved parents receiving newsletters, parents receiving notes about disruptive behavior, parents participating in instruction, parents receiving notes from teachers, and parents speaking about their jobs. For example, nearly 90 percent of the scholarship users compared with just over three-fourths of the control-group parents reported receiving notes from teachers.

Religious Practices

The SCSF program had an impact on students' religious practices. Compared with the students in the control group, private-school parents more often said that their children received religious instruction outside of school, participated in church youth groups, and attended religious services (Table 12). Twenty-seven percent of the private-school students, but only 14 percent of the control group, said that they have been receiving religious instruction outside of school. Half the students in private schools said they participated in church youth groups compared with 40 percent of students in the control group. Finally, students in private schools had attended church services more frequently than members of the control group. Nearly 60 percent of the scholarship students reported attending religious services, as compared to less than a third of those in the control group. The effects of the scholarship program on student reports of their religious practice are as large after two years as they were after one year.[35]

The higher level of religious activity among scholarship users was, in all likelihood, a genuine program impact, not a function of any selectivity in the population using the scholarship. The award of a scholarship was random, and two years earlier, when parents were asked in the

baseline survey about their religious affiliations, no significant differences in religious affiliation between the two groups could be detected.

PARENTAL INVOLVEMENT IN CHILD'S EDUCATION

Supporters of school choice claim that when parents choose a school, the family becomes more engaged in the child's education. Working together, schools and parents create a more effective educational environment for their children.[36] But choice critics argue that any observed differences in parental engagement with private schools is due to the selected nature of the families that choose private schools in the first place.

The evidence after two years provides little indication that school choice increases family engagement in children's education. Nor has the program yet had any significant impact on parental involvement in children's education (Table 13). Parents were asked how often they helped their child with homework, talked with their child about school, attended school activities, and worked on school projects. In every case, the answers given by the scholarship users and members of the control group were largely the same. These findings are similar to those reported in the first-year evaluation.[37]

STUDENT ADJUSTMENT TO CHOICE SCHOOLS

At least according to their survey responses, private-school students do not seem to have serious problems adjusting to their new classmates. As also observed at the end of the first year,[38] private-school students reported the same average number of friends in schools as did the control-group students. And students attending private school were no more likely to say that they often "feel made fun of" by other students than were the control-group students, further evidence of adaptation to the new school.

Parental and Student Satisfaction

Most studies of scholarship or voucher programs for low-income minority families have found that families receiving the scholarships are much more satisfied with their schooling than are families who remain in public schools.[39] The results from New York's second year confirm the earlier findings. When asked to assess their school overall, families give higher marks to the private schools. Nearly 40 percent of the scholarship users give their school an "A" compared with less than a tenth of the control group do (Table 15).

We also examined parental satisfaction with specific dimensions of school life. On every aspect of a school about which parents were questioned, private-school parents were substantially more satisfied than control-group parents. The percent of parents "very satisfied" with a private school was significantly higher for all of the following: location of the school, school safety, teaching, parental involvement, class size, school facility, student respect for teachers, teacher communication with parents with respect to their child's progress, extent to which child can observe religious traditions, parental support for the school, discipline, clarity of school goals, staff teamwork, teaching, academic quality, the sports program, and what is taught in school (Table 15).

Forty-four percent of the private-school parents were very satisfied with the academic quality of the school as contrasted with just 5 percent of the control group. Similarly, 47 percent of the private-school parents expressed the highest satisfaction with "what's taught in school" compared with 7 percent of the control group.

The scholarship program had the smallest impact on parental satisfaction with schools' sports programs. Less than a quarter of the scholarship parents were very satisfied with a school's sports program compared with 6 percent of the control- group parents.

Differences in student reports of satisfaction were in the same direction but not as great as those reported by parents. In the short questionnaire administered to those in third through sixth grades, students were asked to give an overall grade for their school. The data in Table 15 indicate that students in private school were more likely to give their school an "A" and less likely to give failing grades of "D" and "F." Student reports after year two are very similar to those after year one.

It may be hypothesized that the voucher program, like other innovations, has a Hawthorne effect, namely, the fact of innovation and change by itself enhances levels of parental satisfaction. If so, then the scholarship program might be expected to have a lesser impact on parental satisfaction after two years than after one. Parents may initially be impressed with the fact that they have a choice of school; with the passage of time, however, the initial impression may be moderated by the discovery that the school may not fully live up to its reputation.

Differences in the level of satisfaction between public and private schools did not, for the most part, change significantly between the first and second years of the voucher program. On all the specific dimensions of school life about which parents were asked, differences in the percent of public- and private-school parents claiming satisfaction did not change significantly from one year to the next. For example, the difference in private- and public-school parent satisfaction with the academic quality of the child's school was 40 percentage points at the end of the first year and 39 points at the end of the second--a statistically insignificant change. Nor were there any statistically significant changes from the first to the second year in parental responses to the 16 questions probing about satisfaction with other dimensions of school life, including class size, discipline, school safety, teaching, teacher-parent communication, and teaching values.

When, however, parents were asked the overall grade they would give the school attended by their child, we found some evidence that the program's impact was declining. Whereas 49 percent of private-school parents gave their school an "A" at the end of the first year, only 38 percent did so at the end of the second year. Public-school parents who gave their school an "A" declined by only one percentage point, from 10 to 9 percent. In other words, the difference in private- and public-school parent willingness to give their school an "A" declined from 39 to 29 percentage points, a significant change. Still, after two years, private-school parents were still much more likely to give their school an "A" than were control-group parents.

CONTINUING IN THE PROGRAM

It is generally thought that students perform better if they can remain in the same school throughout the school year and from one year to the next. Does school choice destabilize a child's educational experience? In his evaluation of the Milwaukee school choice program, John Witte said that one of his concerns was the high rate of attrition from private schools.[40] And a number of choice critics have raised questions about the readiness of private schools to expel students who do not "fit in."[41] But other studies have found that students from low-income families are more likely to remain in the same school throughout the school year and from one year to the next.[42]

The SCSF pilot program provides an opportunity to examine this question after two years of student participation in a voucher program. In general, the findings confirm the conclusion that school choice does not disrupt the education of low-income students.

Suspension Rates and School Changes During the School Year

As observed during the first year, suspension rates in the second year were much the same for both groups. Two percent of the parents in the control group and 3 percent in the private-school group reported that their child had been suspended (Table 14).[43]

A very high percent of all students in the study remained in the same school for the entire year, much higher than is typical of inner-city minority children in general. The likely reason is that the families who applied for scholarships were strongly committed to their children's education. No differences in school mobility rates are apparent between the two groups, a repetition of the finding observed in the first-year evaluation.[44]

In short, school mobility was very low and virtually identical for both scholarship users and members of the control group. School expulsion or suspension was a trivial factor, affecting less than 1 percent of each group. These findings from the second-year evaluation resemble closely those observed after one year.[45]

Plans for Next Year

Scholarship recipients say they are more likely to attend the same school next year than are the members of the control group. More than 80 percent of the families of students attending private school said they expect their child to be back at the same school compared with about 60 percent of the control group (Table 17). However, 17 percent of the control-group parents gave "graduating" as the reason for the change in schools, with only 2 percent of the scholarship students. Apparently, many of the students in public schools "graduate" from elementary to middle school, whereas students in private school do not. Once this difference in the organization of the school system is taken into account, there seems to be no significant difference in mobility rates from one year to the next for the two groups of families.

Approximately 4 percent of scholarship parents said they were changing schools because they did not find the quality of the school acceptable, and another 4 percent said they were planning to move away from the school. The next most frequently mentioned reasons for changing schools, given by no more than 3 percent of scholarship parents, were inconvenient location and school expense. None of the parents of students attending private schools said they had been asked by their school "not to return."

The reasons control-group parents gave for moving were fairly similar. Apart from graduation, the most frequently given reason was school quality. Seven percent of all control-group families said the quality of their school was not acceptable. Findings after two years do not differ in any important way from those observed after the first year.[46]

TEST PERFORMANCE

This second-year evaluation of the SCSF program in New York City provides an opportunity to estimate the impacts on student test performance after a voucher program has been in place for two years. We report the impacts on test performances on the Iowa Test of Basic Skills in reading and mathematics in terms of (1) an offer of a school voucher and (2) going to a private school by the voucher recipients. Since mathematics and reading test scores were highly correlated, we report results for the combined performance of students on both tests along with the results for each test separately. The impact of a voucher offer is reported as the effect on student national percentile rankings (NPR), which may vary between one and 100. Nationally, the median NPR score on the Iowa Test of Basic Skills is 50. We also report effect sizes of selected impacts.

Results

For all students in grades three through six, Tables 18 through 20 report the average impact of the offer of a voucher on the students' combined test-score performance and separate estimates on their reading and mathematics scores. The tables also show average impacts for African American and Hispanic students.[47] The numbers of students from other ethnic groups were too few to permit separate analysis. To see whether the voucher intervention affected the often reported test score gap between minorities and whites, results are examined for Latinos and African Americans separately.

Besides reporting results for all children or by race/ethnic groups, we report results separately for students in grades three, four, five, and six. Students are classified according to the grade they were expected to be in at the end of the second year of the voucher program. Most but not all students were in fact in the designated grade; some were held back a grade while others skipped a grade. To facilitate accurate comparison, all students were tested as if they were in the expected grade. Because baseline test scores were not collected from applicants in kindergarten at the time of application, no results are reported for these voucher students.

The impact of *a voucher offer* combines results for both those who made use of the voucher, those who were offered a voucher but remained in public schools, and students in the control group who attended a private school, thus masking the potential impact of going to a private school. Using a statistical approach described in the appendix, we have estimated the impact of going to a private school and present the results alongside the impact of a voucher offer. Column seven reports the average programmatic impact of going to a private-school on student NPR scores.

Impact of a Voucher Offer

Results from the SCSF evaluation show that after two years the offer of a voucher had no overall impact on student test performance (Tables 18 through 20); that is, students offered vouchers had about the same test scores as students in the control group. When we estimate impacts separately for African American and Hispanic students, as for the year-one results for the evaluations in Dayton and Washington, a different picture emerges. That is, we find positive impacts for African Americans but no impacts for Hispanic students.

The combined test-score performance of African American students who received a voucher offer was 3.3 NPR points higher than the combined test-score performance of those not offered a voucher (effects size = .16 of a standard deviation).[48] The reading test-score performance of those offered a voucher was 3.4 percentile points higher and the mathematics 3.1 points higher (effect sizes are .16 and .13 of a standard deviation, respectively). The differences in combined test-score performance for the voucher group and the control group was statistically significant. The reading-score differences for the groups were also significant, but the mathematics-score differences, though nearly as large, were not statistically significant.

When we estimate impacts separately by grade level for all students, we find no impacts on the composite test scores for students. A look at the two parts of the composite score reveals a significant impact on reading achievement in grade six (effect size = .21). We find no impact by grade level on mathematics achievement. Among African Americans, we observe a moderately large impact on the combined test scores for grade six (effect size = .39) and similarly large impacts on both reading and mathematics achievement test scores.

Going to a Private School

Turning from the effect of a voucher offer to the impact of going to a private school for two years, column 7 of Tables 18-20 indicates no significant effects on test-score performance (combined) when all students are considered together.[49,50] Nor were any significant effects observed on the test scores of Hispanic students.[51]

Here, too, the results for African Americans were noticeably different. For this group of students, the combined test scores of those going to a private school were, on average, 4.4 NPR points higher than similar students in the control group. The reading test scores of those going to a private school were, on average, 4.6 NPR points higher while mathematics scores were 4.2 points higher. The estimate of the effect of going to a private school on the combined test-score performance was statistically significant. The reading score results were also statistically significant, but the mathematics score was not.

An examination of the results by grade level reveals no statistically significant effects of going to a private school for African American students in grades three, four, and five two years after initiation of the program; however, significant effects were detected for students in grade six. Sixth-grade students going to a private school achieved, on average, a combined test score that was 10 NPR points higher than the score achieved by those who attended a public school (effect size = .48). Their mathematics score was 11 NPR points higher and their reading score 8.9 points higher (effect sizes are .45 and .41).

Putting the Achievement Results into Context

Overall results after two years are similar to those observed after one year. In the first as in the second year of the voucher program, the effects of a voucher offer and of attending a private

school on the combined test scores of Hispanic students were not significant. Nor were any overall effects observed among all students after one year.[52]

The results for African Americans were different, however. The effect of a voucher (offer or attending a private school) on the combined test-score performance of African Americans after one year was 5-6 NPR points, a larger effect than the 3-4 point effect observed in year two. Given that the drop is not statistically significant, the most cautious interpretation of these results is that positive effects detected in year one carried over but did not increase in year two. It remains to be seen what impact on test scores will be observed after students have participated in the voucher program for three years.

The effect size of the difference in combined test scores for African American students in NYC evaluation is .23, generally thought to be a moderately large effect of an education intervention. The difference between black and white test scores is roughly one standard deviation. This intervention, after two years, moderates a fifth of this difference.

It remains to be seen whether results shown here will continue to be observed in subsequent years of the voucher experiment in New York City.

[1] We wish to thank the School Choice Scholarships Foundation (SCSF) for co-operating fully with this evaluation. This evaluation has been supported by grants from the following foundations: Achelis Foundation, Bodman Foundation, Lynde and Harry Bradley Foundation, Donner Foundation, Milton and Rose D. Friedman Foundation, John M. Olin Foundation, David and Lucile Packard Foundation, Smith Richardson Foundation, and the Spencer Foundation. We are grateful to Kristin Kearns Jordan and other members of the SCSF staff for their co-operation and assistance with data collection. We received helpful advice from Paul Hill, Christopher Jencks, Donald Rock and Donald Rubin. Christina Clark from Mathematica Policy Research, was instrumental in preparing the survey and test score data, and in implementing many of the analyses reported in the paper. Additional research assistance provided by David Campbell, Rachel Deyette, and Jennifer Hill; staff assistance was provided by Shelley Weiner, Lilia Halperin and Micki Morris. The methodology, analyses of data, reported findings and interpretations of findings are the sole responsibility of the authors of this report and are not subject to the approval of SCSF or of any foundation providing support for this research.

[2] Disparate findings have emerged from these studies. For example, one analysis of the Milwaukee choice experiment found test scores gains in reading and math, particularly after students had been enrolled for three or more years, while another study found gains only in math, and a third found gains in neither subject. Jay P. Greene, Paul E. Peterson, and Jiangtao Du, "School Choice in Milwaukee: A Randomized Experiment," in Paul E. Peterson and Bryan C. Hassel, eds., *Learning from School Choice* (Washington, D. C.: Brookings, 1998), pp.335-56; Cecilia Rouse, "Private School vouchers and Student Achievement: An Evaluation of the Milwaukee Parental Choice Program," Department of Economics, Princeton University, 1997; John F. Witte, "Achievement Effects of the Milwaukee Voucher Program," paper presented at the 1997 annual meeting of the American Economics Association. On the Cleveland program, see Jay P. Greene, William G. Howell, and Paul E. Peterson, "Lessons from the Cleveland Scholarship Program," in Paul E. Peterson and Bryan C. Hassel, eds., *Learning from School Choice* (Washington, D. C.: Brookings, 1998), pp. 357-92; Kim K. Metcalf, William J. Boone, Frances K. Stage, Todd L. Chilton, Patty Muller, and Polly Tait, "A Comparative Evaluation of the Cleveland Scholarship and Tutoring Grant Program: Year One: 1996-97," School of Education, Smith Research Center, Indiana University, March 1998. Greene, Peterson, and Du, 1998 report results from analyses of experimental data; the other studies are based upon analyses of non-experimental data.

[3] For a discussion of major findings, see Paul E. Peterson, David E. Myers, William G. Howell, and Daniel P. Mayer, "The Effects of School Choice in New York City," in Susan B. Mayer and Paul E. Peterson, *Earning and Learning: How School Matter* (Washington, D. C.: Brookings, 1999), Ch. 12. Similar evaluations of voucher initiatives in Washington, D. C. and Dayton, Ohio are currently underway. See Patrick Wolf,. William G. Howell and Paul E. Peterson, "School Choice in Washington, DC: An Evaluation after One Year," Paper prepared for the Conference on Charters, Vouchers and Public Education, March 2000, sponsored by the Program on Education Policy and Governance, Kennedy School of Government, Harvard University, Cambridge, MA 02138. Website address: http://data.fas.harvard.edu/pepg/ For Dayton, see William G. Howell and Paul E. Peterson, "School Choice in Dayton, Ohio: An Evaluation After

One Year," Paper prepared for the Conference on Charters, Vouchers and Public Education, March 2000, sponsored by the Program on Education Policy and Governance, Kennedy School of Government, Harvard University, Cambridge, MA 02138. Website address: http://data.fas.harvard.edu/pepg/

[4] Recent works making a case for school choice include John E. Brandl, *Money and Good Intentions are not Enough, or Why a Liberal Democrat Thinks States Need Both Competition and Community* (Washington, D. C.: Brookings 1998); Andrew J. Coulson, *Market Education: The Unknown History* (CATO Institute, forthcoming); Clifford W. Cobb, *Responsive Schools, Renewed Communities* (San Francisco, California: Institute for Contemporary Studies, 1992); and Alan Bonsteel and Carlos A. Bonilla, *A Choice for our Children: Curing the Crisis in America's Schools* (San Francisco: Institute for Contemporary Studies, 1997). A collection of essays that report mainly positive school-choice effects are to be found in Paul E. Peterson and Bryan C. Hassel, eds. *Learning from School Choice* Washington, D. C.: Brookings, 1998). Works generally critical of school vouchers include: Carol Ascher, Norm Fruchter, and Robert Berne, *Hard Lessons: Public Schools and Privatization* (New York: Twentieth Century Fund Press, 1996); Carnegie Foundation for the Advancement of Teaching, *School Choice: A Special Report* (Princeton, New Jersey, Carnegie foundation for the Advancement of Teaching, 1992); Amy Gutmann, *Democratic Education* (Princeton: Princeton University Press, 1987); Henry M. Levin, "Educational Vouchers: Effectiveness, Choice, and Costs," *Journal of Policy Analysis and Management* 17:3 (Summer, 1998),pp. 373-392; Bruce Fuller and Richard F. Elmore, with Gary Orfield, eds. *Who Chooses? Who Loses? Culture, Institutions, and the Unequal Effects of School Choice* (New York: Teachers College Press, 1996); E. Rasell and R. Rothstein eds., *School Choice: Examining the Evidence* (Washington, D. C.: Economic Policy Institute, 1993); Peter W. Cookson, *School Choice: The Struggle for the Soul of American Education* (New Haven: Yale University Press).

[5] Major studies finding positive educational benefits from attending private schools include James S. Coleman, Thomas Hoffer, and Sally Kilgore, *High School Achievement* (New York: Basic Books, 1982); John E. Chubb and Terry M. Moe, *Politics, Markets, and America's Schools* (Washington: Brookings 1990); Derek Neal, "The Effects of Catholic Secondary Schooling on Educational Achievement," (University of Chicago, Harris School of Public Policy and National Bureau for Economic Research, 1996). Critiques of these studies have been prepared by Arthur S. Goldberger and Glen G. Cain, "The Causal Analysis of Cognitive Outcomes in the Coleman Hoffer, and Kilgore Report," *Sociology of Education*, vol. 55 (April-July 1982), pp. 103-22; Douglas J. Wilms, "Catholic School Effects on Academic Achievement: New Evidence from the High School and Beyond Follow-up Study," *Sociology of Education*, vol. 58 (1985), pp. 98-114.

[6] Frederick Mosteller, "The Tennessee Study of Class Size in the Early School Grades," *The Future of Children* 5 (1995), pp. 113-27; Alan B. Krueger, "Experimental Estimates of Education production Functions," *Quarterly Journal of Economics* (May 1999) 497-532.

[7] David Myers and Allen Schirm. The Impacts of Upward Bound: Final Report for Phase I of the National Evaluation. U.S. Department of Education, Office of the Under Secretary, 1999.

[8] See Appendix. Also, these findings are reported in Peterson, Myers, Haimson, and Howell, 1997.

[9] Jennifer Hill, Donald B. Rubin and Neal Thomas, "The Design of the New York School Choice Scholarship Program Evaluation." Paper presented before the American Political Science Association annual meeting in Boston, MA, August 31, 1998; Paul E. Peterson, David Myers and William G. Howell, "An Evaluation of the New York City School Choice Scholarships Program: The First Year," PEPG paper 98-12, Program on Educatoin Policy and Governance, Kennedy School of Government, Harvard University, 1998. The second report is available at the website: http://data.fas.harvard.edu/pepg/

[10] To adjust for non-response, we used non-response adjusted sample weights (see appendix). Since the number of missing cases is relatively small and the characteristics of the missing cases do not differ markedly from observed cases, the assumptions necessary for utilization of this procedure are not particularly restrictive.

[11] Since all eligible children within a family could receive a scholarship, some families had two or more children in the evaluation. The presence of multiple children from the same family produces clustering effects. When clustering is present and analyses are conducted under the assumption of simple random sampling—that is, that all observations are independent—researchers may under-estimate the standard error of the estimated impact, overestimate test statistics, and conclude inappropriately that a difference between the treatment group and the control group is statistically significant. To better approximate the true standard error, we estimated the standard errors for the impact estimates using the bootstrap method (Robert Stine, 1990. "An Introduction to Bootstrap Methods: Examples and Ideas." In J. Fox and J.S. Long (Eds.), *Modern Methods of Data Analysis*, p. 325-373. Newbury Park, CA: Sage Publications; Bradley Effron, 1982. "The Jackknife, the Bootstrap, and Other Resampling Plans." Philadelphia, PA: Society for Industrial and Applied Mathematics). This method provides a direct estimate of the variability in the treatment impact without having to make an assumption about the independence of the observations in the sample.

[12] Peterson, Myers, Haimson, and Howell, 1997. Also, see Rachel Deyette, "Selection into Voucher Programs: How do Applicants Differ from the Eligible Population?" Paper prepared for Program on Education Policy and Governance, Harvard University, forthcoming. Information is drawn from the Integrated Public Use Microdata Series data set of the U. S. Census, which has been created at the University of Minnesota.

[13]We computed the treatment differential (58 and 64 points) using two approaches. First, we compared the percent of treatments with two years of exposure to a private school (62 percent) with the percent of the control group that reported attending a private school for two years (4 percent). Second, we compared the percent of the treatment group that attended a private school for one or more years (76 percent) with the percent of the control group with the same pattern of private school attendance (8 percent).

[14] Amy Stuart Wells, "African-American Students' View of School Choice," in Fuller and Elmore, eds., *Who Chooses?* p. 47.

[15] Sandra Feldman, "Let's Tell the Truth," *New York Times*, November 2, 1997, p. 7 (Advertisement).

[16] Jay P. Greene, William G. Howell, and Paul E. Peterson, "Lessons from the Cleveland

Scholarship Program," in Paul E. Peterson and Bryan C. Hassel., eds., *Learning from School Choice* (Washington, D. C.: Brookings,1998), pp. 357-94. Paul E. Peterson, David Myers and William G. Howell, "An Evaluation of the Horizon Scholarship Program in the Edgewood Independent School District, San Antonio, Texas: The First Year," Occasional Paper, Program on Education Policy and Governance, Harvard University, Cambridge MA, October, 1999.

[17] Despite suspicions that families with more children would be less likely to be able to raise these supplemental funds and therefore more likely to decline the scholarship, a logit analysis revealed that no relationship exists between family size and the probability of declining a scholarship.

[18] Carnegie Foundation for the Advancement of Teaching, *School Choice: A Special Report* Princeton, New Jersey: Carnegie Foundation for the Advancement of Teaching, 1992), p. 13.

[19] Dan Murphy, F. Howard Nelson and Bella Rosenberg, "The Cleveland Voucher Program: Who Chooses? Who Gets Chosen? Who Pays?" (New York: American Federation of Teachers, 1997), p. 10.

[20] Nicholas Lemann, "A False Panacea," *Atlantic* (January 1991), p. 104, as quoted in Abigail Thernstrom, *School Choice in Massachusetts* (Boston: Pioneer Institute for Public Policy Research, 1991), p. 40.

[21] Seventy-five percent of those offered a scholarship made use of the scholarship; some non-users also reported finding a school they wanted.

[22] Murphy, Nelson, and Rosenberg, *The Cleveland Voucher Program.*

[23] Jay P. Greene, "Civic Values in public and Private Schools," in Peterson and Hassel, eds. *Learning from School Choice*, pp. 83-106.

[24] Provided with large differences in school size and other characteristics of schools for members of the treatment and control groups, we plan in the future reports to assess the extent to which the differences may indicate impacts of vouchers on other outcomes.

[25] Peterson, Myers and Howell, 1998, table 5.

[26] Peterson, Myers, and Howell, 1998, Table 5.

[27] Peterson, Myers, and Howell, 1998, Table 5.

[28] Peterson, Myers, and Howell,1998, table 6.

[29] Murphy, Nelson, and Rosenberg, *The Cleveland Voucher Program.*

[30] Peterson, Myers, and Howell,1998, table 8.

[31] Peterson, Myers and Howell, 1998, table 8.

[32] For very similar first-year results, see Peterson, Myers, and Howell, 1998, table 9.

[33] Peterson, Myers and Howell, Table 9.

[34] Peterson, Myers and Howell, Table 10.

[35] The impact of the program on religious practice after one year is reported in Peterson, Myers, and Howell, Table 11.

[36] Brandl, *Money and Good Intentions Are Not Enough.*

[37] Peterson, Myers, and Howell, 1998, Table 13.

[38] Peterson, Myers and Howell, 1998, Table14.

[39] A summary of findings from earlier studies is available in Paul E. Peterson, "School Choice: A Report Card," in Peterson and Hassel, *Learning from School Choice*, p. 18. Mark Schneider, Paul Teske, Melissa Marschall, and Christine Roch, "Tiebout, School Choice, Allocative and Productive Efficiency," paper prepared for annual meetings of the American Political Science Association, 1998, finds higher levels of parental satisfaction within New York City public schools, when parents are given a choice of school.

[40] John F. Witte, "First Year Report: Milwaukee Parental Choice Program," University of Wisconsin—Madison, Department of Political Science and Robert M. Lafayette Institute of Public Affairs, November 1991.

[41] Murphy, Nelson, and Rosenberg, *The Cleveland Voucher Program: Who Chooses? Who Gets Chosen? Who Pays?*

[42] Jay P. Greene, William G. Howell, and Paul E. Peterson, "Lessons from the Cleveland Scholarship Program," in Peterson and Hassel, eds., *Learning from School Choice*, pp. 376-80.

[43] Peterson, Myers, and Howell, 1998, table 16.

[44] These percentages may underestimate the actual rate of school mobility for both scholarship students and those in the control group. The families that did not attend questionnaire administration sessions probably were more likely to have moved, making it more difficult for evaluation staff to locate them. If so, the children in those families that could not be located would be more likely to have changed schools. In this regard, it is important to note that the response rate was less for the control group than for scholarship users.

[45] Peterson, Myers, and Howell, 1998, Table 16.

[46] Peterson, Myers, and Howell, 1998, Table 17.

[47] About 43 percent of those students identified as Hispanic are Puerto Ricans, about 40 percent are from the Dominican Republic, and the remaining 17 percent are identified as other.

[48] All effect sizes presented in the paper are in standard deviations. An effect size of .16 shows that a student in the voucher group with an average test score had a higher score than 56 percent of the students in the control group.

[49] To assess the impact of going to a private school, we used two different approaches. First, we computed the impact of ever attending a private school; the counterfactual is always attending a public school. Second, we computed the impact of attending a private school for two years; the counterfactual for this comparison is public school attendance and attendance in private schools for less than two years. Impact estimates using both approaches are similar and we present in the

ever attending are displayed in Appendix E.

[50] As for the impact of a voucher offer, we find a significant impact on reading achievement in grade 6, but no overall impact.

[51] The approach for dealing with missing values in the construction of the private school variable for the test score tables, and the tables reporting results from the parent and student surveys differed. We should note that missing values were only present for the control group; administrative records were used for the treatment group and these data were complete. Self-reports were used for the control group and there were missing data in some surveys. For the impacts based on responses from the parents and students, we constructed an indicator of whether a child attended a private school in year 2. If the control group parent did not respond to the private school item, we set the indicator to a missing value. For the test score tables we imputed values so that we could preserve sample points for the analyses that looked at impacts separately by grade level and by race/ethnicity; this approach stretched the data more thinly across groups. The following procedure was used to impute the values for attending a private school for two years in the test score analyses: (1) if missing in year 2 and not year 1, we assumed students attended the same kind of school both years and used the year 1 value; (2) if missing in year 1 and not year 2, we assumed student attended same kind of school both years and used the year 2 value, and (3) if school type was missing in year 1 and year 2, we assumed students attended the same kind of school as attended at baseline--because all students were attending a public school at baseline, this means we assumed they attended a public school in both follow-up years.

[52] The results presented in the first year report showed very small impacts for all students and were statistically significant when using one tailed-tests. This year, we have switched to using two-tailed tests based on both comments from reviewers and consideration on the range of questions policy makers and parents may wish to pose concerning whether there are no impacts or harmful effects associated with vouchers. There were small changes in the year one estimates because of improvements we made in the non-response adjusted weights.

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	Baseline			
	Attended Session	Test Scored		Attende Session
		Reading	*Math*	
Student Test:				
Overall	100	79	73	78
Scholarship Group	100	79	73	86
Control Group	100	79	73	75
Family Survey:				
Overall	100	N/A	N/A	82
Scholarship Group	100	N/A	N/A	84
Control Group	100	N/A	N/A	80
Student Survey:				
Overall	100	N/A	N/A	75
Scholarship Group	100	N/A	N/A	76
Control Group	100	N/A	N/A	74

[a] All percentages computed based on total sample of all families

BLE 1

NSE RATES
entages[a])

First Follow-Up			Second Follow-Up		
d	Test Scored		Attended Session	Test Scored	
	Reading	*Math*		*Reading*	*Math*
	75	74	65	63	59
	78	78	69	67	62
	72	69	60	59	55
	N/A	N/A	74	N/A	N/A
	N/A	N/A	75	N/A	N/A
	N/A	N/A	72	N/A	N/A
	N/A	N/A	66	N/A	N/A
	N/A	N/A	69	N/A	N/A
	N/A	N/A	62	N/A	N/A

(students) who participated in the second stage of the lottery.

TABLE 2

DEMOGRAPHIC CHARACTERISTICS FOR SCHOLARSHIP TAKERS AND DECLINERS[a]
(Percentages)

	Takers (1)	Decliners (2)	Difference (3)
Family income:[***]			
Less than $5,000	25	37	-13[***]
$5,000-$10,999	36	40	-4
$11,000-$24,999	36	21	15[***]
$25,000-$39,999	4	2	2
$40,000 or more	0	0	0
Total	100	100	
Average family income	$10,419	$7,732	$2,686[***]
Family receiving following forms of government assistance:			
Welfare	52	67	-15[***]
Social Security	12	10	1
Mother's employment status:[***]			
Full time	25	16	9[***]
Part time	17	15	1
Looking for work	44	51	-7[*]
Not looking	13	16	-3
Don't Know	1	1	0
Total	100	100	
Percent of Mothers at Current Residence for 2 years or Less	19	24	-6[*]
Highest Level of education completed by Mother:[***]			
Some high school	19	25	-6[*]
High school graduate or GED	25	27	-2
Some college	45	33	11[***]
Graduated from a 4-year college	8	9	-1
More than a 4-year college degree	3	3	-1
Don't know	1	3	-2
Total	100	100	
Mother's ethnicity:[***]			
Black	47	45	2
White	4	9	-6[***]
Puerto Rican	17	19	-2
Hispanic other than Puerto Rican	26	24	2
Other	6	3	3[*]
Total	100	100	

TABLE 2 (*continued*)

	Takers (1)	Decliners (2)	Difference (3)
Mother's religious affiliation:[***]			
Baptist	19	23	-4
Other Protestant	17	15	3
Catholic	54	46	8[*]
Other Religion	5	10	-5[**]
No Religion	5	6	-1
Total	100	100	
Percent of mothers US born	59	61	-3
Percent of households with English as main language	80	75	4
Percent of children receiving any special education services related to a disability or learning problem	10	14	-4[*]
Baseline test scores (in national percentile rankings):			
Reading	23	23	1
Math	17	16	1
(N)	506-860	260-460	

SOURCE: FAY30708.do

[*]Statistically significant at .1.
[**]Statistically significant at .05.
[***]Statistically significant at .01
[***]Significant at .01 using the chi-square. The chi-square test was used to test for differences in the distributions of categorical outcomes between takers and decliners.

[a] Takers are defined here as students in the treatment group who made use of the scholarship in year 2; decliners are students in the treatment group offered a scholarship but did not utilize it in year 2.

TABLE 3

PERCENTAGE OF SCHOLARSHIP TAKERS THAT RESPONDED THAT THE FOLLOWING WAS ONE OF THE THREE MOST IMPORTANT IN CHOOSING A SCHOOL

	Percentage	Std. Dev.
That the child went to a neighborhood public school	7	26
The school was the only choice available	10	30
Academic quality	59	49
Safety	36	48
Religious instruction	28	45
Convenient location	20	40
The child's friends	0	7
The sports program	0	6
The school facilities	4	19
Discipline	42	49
Teacher quality	35	48
What is taught in class	27	44
Class size	21	41

TABLE 4

FAMILIES WHOSE CHILD ATTENDED PREFERRED SCHOOL
(Percentage)

	Control Group[a]	Scholarship Offered[b]	Effect of Scholarship[c]
Attended preferred school:	56	79	23***
Reason for not attending preferred school:[d]			
Could not pay school cost	31	12	-19***
No space available	4	5	1
Applied too late	1	4	3***
Transportation problems	3		1
School location	2	2	0
Child not given space	4	4	0
Child failed admission test	2	2	0
Not affiliated with church	1	1	0
Moved away from school	1	1	0
No reason given	2	1	-1

Weighted values reported. *Effect of offer is statistically significant at .1 level, two-tailed test; ** Effect of offer is statistically significant at .05 level, two-tailed test; *** Effect significant at .01 level, two-tailed test.

[a] All applicants not offered a scholarship. Eight percent of the control group reported placing their child in a private school; the remainder were in public school.

[b] Those who were offered a scholarship, whether or not they made use of it.

[c] Differences in outcomes between those offered a scholarship and those in control group.

[d] Parents could give more than one reason for not sending their child to a preferred school.

TABLE 5

SIZE AND QUALITY OF SCHOOL FACILITIES
(Percentages)

	Scholarship Offered[a] (1)	Control Group[b] (2)	Scholarship Offer Impact[c] (3)	Scholarship User[d] (4)	Control Group Complier[e] (5)	Switch to Private School[f] (6)
Average school size	403	498	-96***	385	525	-140***
Average class size	25	26	-1**	25	27	-2***
Percentage satisfied with school facilities	30	10	20***	33	5	28***
Percentage with the following resources						
Special programs for non-English speakers	52	76	-24***	44	80	-36***
Special programs for learning disabled	63	74	-11***	58	74	-16***
Nurses' office	79	94	-15***	75	96	-21***
Child counselor	77	83	-6*	75	83	-8**
Library	89	93	-4	88	93	-5**
Cafeteria	90	96	-6***	90	98	-8***
Special programs for advanced learners	53	58	-5	48	55	-7
After-school program	91	90	1	92	90	2
Gym	91	90	1	91	89	2
Arts program	81	81	0	80	79	1
Computer lab	89	84	5	90	83	7**
Music program	83	77	6*	84	75	9***
Individual tutors	58	49	9*	57	45	12***
(N)	889-1399			889-1399		

NOTES:
[a]Those who were offered a scholarship, whether or not they made use of it.
[b]Those who were not offered a scholarship.
[c]Estimated impact of being offered a scholarship.
[d]Those who were offered a scholarship and identified by SCSF staff as having used their scholarship to attend a private school.
[e]Those in the control group who would have used a scholarship had they been offered one as described in Appendix C.
[f]Estimated impact of participation in the program, using a two-stage least squares model, as described in Appendix C.
*Impact of offer is statistically significant at .1 level, two-tailed test; **Impact of offer is statistically significant at .05 level, two-tailed test; ***Impact significant at .01 level, two-tailed

TABLE 6

ETHNIC AND RACIAL ISOLATION IN CLASSROOM
(Percentages)

	Scholarship Offered (1)	Control Group (2)	Scholarship Offer Impact (3)	Scholarship User (4)	Control Group Complier (5)	Switch to Private School (6)
What percentage of students in child's class are minority?						
Less than half	13	12	1	13	11	2
About half	22	21	1	25	24	1
More than half	35	31	4	33	27	6
Everyone	30	36	-6	30	38	8**
Total	100	100		101	100	
(N)	1402			1402		

See notes to Table 5.

TABLE 7

SPECIAL EDUCATION FACILITIES AND PROGRAMS
(Percentages)

	Scholarship Offered (1)	Control Group (2)	Scholarship Offer Impact (3)	Scholarship User (4)	Control Group Complier (5)	Switch to Private School (6)
Children with physical disabilities	4	2	2	3	1	2*
Children with learning disabilities	10	10	0	9	9	0
Enrolled in ESL course	4	5	-1	3	5	-2
(N)	1422-1425			1422-1425		
Percentage who believe school doing 'very well' at attending to these needs:						
Physical disabilities*	35	47	-12	33	62	-29
Learning disabilities*	30	24	6	26	16	10
ESL*	31	28	3	25	19	6
(N)	55-160			55-160		

See notes to Table 5.

*These figures are calculated as a percent of those parents with disabled or non-English speaking children, not as a percent of the entire population.

TABLE 8

PARENT'S PERCEPTION OF SCHOOL CLIMATE
(Percentages)

	Scholarship Offered (1)	Control Group (2)	Scholarship Offer Impact (3)	Scholarship User (4)	Control Group Complier (5)	Switch to Private School (6)
Parents report as serious problem:						
Fighting	40	66	-26***	33	70	-37***
Tardiness	39	59	-20***	33	62	-29***
Kids missing class	34	52	-18***	29	54	-25***
Kids destroying property	29	42	-13***	27	45	-18***
Cheating	31	40	-9**	29	42	-13***
Racial Conflict	27	37	-10***	26	41	-15***
Parents report on school rules:						
School uniform	84	47	37***	96	43	53***
Certain forms of dress forbidden	87	65	22***	95	64	31***
Visitors must sign in at main office	88	94	-6***	86	95	-9***
Hall passes required to leave class	77	86	-9***	74	86	-12***
(N)	1214-1397			1214-1397		

See notes to Table 5.

TABLE 9

STUDENT'S PERCEPTION OF SCHOOL CLIMATE

	Scholarship Offered (1)	Control Group (2)	Scholarship Offer Impact (3)	Scholarship User (4)	Control Group Complier (5)	Switch to Private School (6)
Student reports (percentages):						
Students are proud to attend this school	59	54	5	58	52	6
Behavior rules are strict	67	62	5*	70	65	5
Students get along with teachers	62	50	12***	64	49	15***
Feel 'put down' by teachers	21	25	-4	20	24	-4
Teachers ignore cheating	17	22	-5**	16	23	-7**
There is a lot of cheating in this school	26	34	-8***	25	36	-11***
(N)	1209-1274			1144-211		
Student reports on number of close friends who:[a]						
Like school	4.04	4.06	-0.02	4.01	4.04	-0.03
Get good grades	4.68	4.40	0.28*	4.68	4.30	0.38*
Get into trouble with teachers	2.26	2.29	-0.03	2.33	2.37	-0.04
Use bad languages	1.89	2.25	-0.36**	1.77	2.25	-0.48**
Smoke cigarettes	0.15	0.12	0.03	0.12	0.07	0.05
(N)	1175-1195			1175-1195		

See notes to Table 5.

[a]The index is scored 0 if child reports no close friends at school, 1.5 for 1 to 2 friends, 3.5 for 3 to 4 friends, 5.5 for 5 to 6 friends, and 7.5 for 7 or more friends.

TABLE 10

HOMEWORK
(Percentages)

	Scholarship Offered (1)	Control Group (2)	Scholarship Offer Impact (3)	Scholarship User (4)	Control Group Complier (5)	Switch to Private School (6)
Parents reports:						
Child has more than one hour of homework	60	44	16***	64	41	23***
Homework too easy	7	18	-11***	4	20	-16***
(N)[a]	1410-1431			1410-1431		
Student reports:						
Trouble keeping up with homework	22	26	-4	22	28	-6
Time spent on homework on typical night (in minutes)	50	45	6**	51	44	7**
Teachers return homework always or most of time	50	54	-4	49	55	-6
(N)[b]	1275-1295			1210-1295		

See notes to Table 5.

[a]These values of (N) are drawn from the parent survey.
[b]These values of (N) are drawn from the student survey.

TABLE 11

SCHOOL COMMUNICATION WITH PARENTS
(Percentages)

	Scholarship Offered (1)	Control Group (2)	Scholarship Offer Impact (3)	Scholarship User (4)	Control Group Complier (5)	Switch to Private School (6)
Parents regularly informed about student grades	90	83	7***	94	84	10***
Parents receive notes from teacher	88	79	9***	89	76	13***
Parents receive newsletter	81	65	16***	85	62	23***
Notified of disruptive behavior	88	78	10***	91	77	14***
Parents speak to classes about jobs	37	28	9**	36	24	12***
Parents participate in instruction	62	49	13***	63	44	19***
Parent night	91	88	3	92	88	4
Regular Parent-Teacher Conferences	94	91	3	95	91	4*
Notified of disruptive behavior	88	78	10***	91	77	14***
(N)	1137-1401			1137-1401		

See notes to Table 5.

TABLE 12

RELIGIOUS PRACTICES
(Percentages)

	Scholarship Offered (1)	Control Group (2)	Scholarship Offer Impact (3)	Scholarship User (4)	Control Group Complier (5)	Switch to Private School (6)
Student reports:						
Religious instruction outside school	25	16	9***	27	14	13***
Attend religious services	55	35	20***	59	32	27***
Participate in church group	47	38	9***	50	40	10**
(N)	1248-1273			1184-1210		

See notes to Table 5.

TABLE 13

PARENTAL INVOLVEMENT IN CHILD'S EDUCATION

	Scholarship User (1)	Control Group (2)	Scholarship Offer Impact (3)	Scholarship User (4)	Control Group Complier (5)	Switch to Private School (6)
Average number of times parents did the following:[a]						
Helped child with homework	11	12	0	11	12	0
Helped child with reading, math	10	10	0	10	10	0
Talked with child about school	13	14	0	13	14	1
Attend school activity with child	5	5	0	5	5	0
Worked on school projects	6	5	0	6	5	1
(N)	1399-1424			1399-1424		

See notes to Table 5.

[a] The index is scored 0 if a parent never did the activity, 3 for 1-5 times, 8 for 6-10 times, 13 for 11-15 times and 18 for 16 or more times.

TABLE 14

STUDENT ADJUSTMENT OF CHOICE SCHOOLS

	Scholarship User (1)	Control Group (2)	Scholarship Offer Impact (3)	Scholarship User (4)	Control Group Complier (5)	Switch to Private School (6)
Student reports:						
Number of close friends at school[a]	6	5	0	6	5	0
Percentage of students who feel "made fun of" by other students	36	38	-2	37	39	-2
(N)	1244-1254			1178-1254		
Parent reports (Percentage):						
Child suspended in past year	5	4	1	3	2	1
(N)	1424			1424		

See notes on Table 5.

[a]The index is scored 0 if the child reports no close friends at school, 1.5 for 1 to 2 friends, 3.5 for 3 to 4 friends, 5.5 for 5 to 6 friends, and 7.5 for 7 or more friends.

TABLE 15

PARENTAL AND STUDENT SATISFACTION WITH SCHOOL
(Percent Very Satisfied)

	Scholarship User (1)	Control Group (2)	Scholarship Offer Impact (3)	Scholarship User (4)	Control Group Complier (5)	Switch to Private School (6)
Parental Satisfaction:						
Observe religious traditions	39	9	30***	47	5	42***
Class size	30	11	19***	34	7	27***
Discipline	43	13	30***	47	5	42***
Academic quality	40	13	27***	44	5	39***
Student respect for teachers	45	17	28***	50	11	39***
Parental support	33	11	22***	37	6	31***
Teaching values	37	14	23***	40	7	33***
What taught in school	42	14	28***	47	7	40***
School safety	47	16	31***	52	9	43***
Teaching	47	18	29***	51	10	41***
Teacher-parent communication	43	22	21***	49	19	30***
Clarity school goals	33	12	21***	36	6	30***
Staff teamwork	30	12	18***	32	6	26***
Sports program	20	8	12***	23	6	17***
School facility	30	10	20***	33	5	28***
Parental involvement	33	17	16***	35	12	23***
Location	50	32	18***	53	28	25***
Gave school an 'A'	32	11	21***	38	9	29***
(N)	1354-1436			1354-1436		
Student reports:						
Gave school an 'A'	52	46	6**	53	45	8**
Gave school 'D', 'F'	4	9	-5***	4	11	-7***
(N)	1359			1359		

See notes to Table 5.

TABLE 16

STUDENTS CHANGING SCHOOL DURING SCHOOL YEAR
(Percentages)

	Scholarship User (1)	Control Group (2)	Scholarship Offer Impact (3)	Scholarship User (4)	Control Group Complier (5)	Switch to Private School (6)
Attended same school for entire school year	95	94	1	97	95	2
Reasons why did not attend same school for entire year:						
Moved away	2	2	0	1	1	0
Quality of school	1	2	-1	0	2	-2
School too expensive	1	1	0	1	0	1
Suspended/expelled	0	0	0	0	0	0
Preferred public school	0	0	0	0	0	0
Inconvenient location	0	1	-1**	0	1	-1**
Preferred private school	1	1	0	0	0	0
(N)	1436			1436		

[a]See notes on Table 5.

TABLE 17

SCHOOL MATRICULATION PLANS FOR NEXT SCHOOL YEAR
(Percentages)

	Scholarship User (1)	Control Group (2)	Scholarship Offer Impact (3)	Scholarship User (4)	Control Group Complier (5)	Switch to Private School (6)
Child will attend same school next year	71	56	15	81	60	21
Reasons why student not attend same school for next year:						
Quality of school	6	8	-2	4	7	-3
Moving	5	5	0	4	4	0
Graduating	5	16	-11***	2	17	-15***
Preferred private school	2	2	0	2	2	0
Inconvenient location	3	1	2**	3	1	2**
School too expensive	3	2	1	2	0	2
Children in same school	1	2	-1*	1	3	-2*
Asked not to return	0	0	0	0	-1	1**
Preferred public school	1	1	0	1	1	0
(N)	1429			1429		

See notes on Table 5.

TABL

YEAR TWO COMPOSITE TEST S
DIFFERENCES BETWEE
(Perce

	Scholarship Offered (1)	Control Group (2)	Scholarship Offer Impact (3)	(N)[g] (4)	Schola Us (5
All students:					
Overall Average	25.37	24.91	0.46	1199	24.
Grade 3	20.88	21.78	-0.90	307	21.
Grade 4	26.01	27.70	-1.69	341	22.
Grade 5	27.34	26.80	0.54	313	27.
Grade 6	27.70	24.82	2.88	238	28.
African-American students:					
Overall Average	23.85	20.58	3.27**	497	24.
Grade 3	22.89	21.05	1.85	118	23.
Grade 4	23.61	25.54	-1.93	153	22.
Grade 5	21.88	20.96	0.93	122	23.
Grade 6	28.00	20.08	7.92***	104	28.
Hispanic students:					
Overall Average	24.81	25.42	-0.60	612	24.
Grade 3	18.62	18.30	0.32	164	17.
Grade 4	26.11	25.62	0.49	164	23.
Grade 5	27.18	26.77	0.41	167	26.
Grade 6	28.36	29.32	-0.96	117	30.

NOTES:

See notes to Table 5.

[g]Values of (N) are the range in the unweighted number of people who responded to s

[h]Appendix C describes how between year differences were tested.

*Impact of offer is statistically significant at .1 level, two tailed test; **Impact of offer
two-tailed test.

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SCORE IMPACTS AND IMPACT
N YEAR ONE AND TWO
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arship cer)	Control Group Complier (6)	Switch to Private School (7)	(N) (8)	Impact Differences Between Year One and Two[h] For Scholarship Offered (9)	For Scholarship Users (10)
67	24.02	0.65	1199	0.77	1.01
30	22.58	-1.28	307	3.76*	5.39*
92	25.33	-2.41	341	-0.83	-1.04
17	26.37	0.80	313	1.51	1.92
13	24.28	3.85	238	1.83	2.30
20	19.78	4.41**	497	1.20	1.37
36	21.03	2.33	118	5.51	7.50
10	24.70	-2.59	153	0.09	0.16
83	22.55	1.28	122	2.94	3.96
86	19.09	9.77***	104	1.06	0.54
19	25.08	-0.88	612	-0.06	-0.13
32	16.78	0.54	164	1.60	2.42
12	22.41	0.72	164	-2.52	-3.77
74	26.17	0.57	167	1.71	2.05
51	31.72	-1.21	117	0.19	0.20

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r is statistically significant at .05 level, two-tailed test; ***Impact significant at .01 level,

TAB

YEAR TWO READING TEST S
DIFFERENCES BETWEE
(Perc

	Scholarship Offered (1)	Control Group (2)	Scholarship Offer Impact (3)	(N) (4)	Schola Us (5
All students:					
Overall Average	26.26	24.91	1.35	1199	26.
Grade 3	21.12	22.67	-1.55	307	21.
Grade 4	28.54	29.09	-0.55	341	26.
Grade 5	26.98	24.84	2.14	313	28.
Grade 6	28.86	24.19	4.67**	238	29.
African-American students:					
Overall Average	26.16	22.72	3.44**	497	26.
Grade 3	23.70	24.06	-0.36	118	24.
Grade 4	28.02	27.87	0.15	153	26.
Grade 5	23.05	20.62	2.43	122	24.
Grade 6	30.67	23.45	7.22**	104	29.
Hispanic students:					
Overall Average	25.06	24.89	0.17	612	25.
Grade 3	19.08	19.21	-0.13	164	18.
Grade 4	26.94	27.47	-0.53	164	23.
Grade 5	25.50	23.75	1.75	167	27.
Grade 6	30.53	28.39	2.14	117	33.

See notes to Tables 5 and 18.

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SCORE IMPACTS AND IMPACT
EN YEAR ONE AND TWO
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				Impact Differences Between Year One and Two	
arship er 6)	Control Group Complier (6)	Switch to Private School (7)	(N) (8)	For Scholarship Offered (9)	For Scholarship Users (10)
33	24.33	1.90	1199	-0.31	-0.48
96	24.19	-2.23	307	4.00	5.67
03	26.82	-0.79	341	-2.24	-3.14
09	24.93	3.16	313	-1.89	-2.91
61	23.36	6.24**	238	-0.15	-0.31
07	21.43	4.64**	497	0.09	-0.08
46	24.91	-0.46	118	6.18	8.23
41	26.21	0.19	153	-3.87	-5.00
53	21.15	3.38	122	-0.05	-0.15
68	20.78	8.90**	104	1.75	1.39
49	25.24	0.25	612	-0.86	-1.25
13	18.35	-0.22	164	2.29	3.49
71	24.29	-0.78	164	-2.40	-3.60
84	25.38	2.46	167	-1.64	-2.38
74	31.05	2.69	117	-0.08	0.20

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TABL

YEAR TWO MATH TEST SC
DIFFERENCES BETWEE
(Perc

	Scholarship Offered (1)	Control Group (2)	Scholarship Offer Impact (3)	(N) (4)	Scho
All students:					
Overall – Average	24.47	24.90	-0.43	1199	2
Grade 3	20.65	20.88	-0.24	307	2
Grade 4	23.48	26.31	-2.83	341	1
Grade 5	27.71	28.76	-1.05	313	2
Grade 6	26.54	25.46	1.08	238	2
African-American students:					
Overall – Average	22.10	18.99	3.10	497	2
Grade 3	22.06	18.01	4.05	118	2
Grade 4	18.96	22.97	-4.01	153	1
Grade 5	21.80	22.39	-0.58	122	2
Grade 6	27.43	18.81	8.62**	104	2
Hispanic students:					
Overall – Average	24.65	26.02	-1.37	612	2
Grade 3	18.35	17.59	0.77	164	1
Grade 4	25.34	23.84	1.50	164	2
Grade 5	28.20	29.13	-0.93	167	2
Grade 6	27.86	31.93	-4.07	117	2

See notes to Tables 5 and 18.

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ORE IMPACTS AND IMPACT
EN YEAR ONE AND TWO
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olarship User (5)	Control Group Complier (6)	Switch to Private School (7)	(N) (8)	Impact Differences Between Year One and Two: For Scholarship Offered (9)	Impact Differences Between Year One and Two: For Scholarship Users (10)
3.10	23.71	-0.60	1199	1.84	2.51
0.63	20.97	-0.34	307	3.51	5.10
9.81	23.85	-4.04	341	0.58	1.07
6.26	27.81	-1.55	313	4.92*	6.75*
6.65	25.20	1.45	238	3.81	4.90
2.32	18.14	4.19	497	2.31	2.83
2.27	17.16	5.11	118	4.84	6.78
7.80	23.18	-5.38	153	4.06	5.31
3.13	23.94	-0.81	122	5.93	8.06
8.04	17.40	10.64**	104	0.37	-0.31
2.89	24.91	-2.02	612	0.74	1.00
6.50	15.20	1.30	164	0.92	1.34
2.54	20.32	2.22	164	-2.65	-3.93
5.64	26.95	-1.31	167	5.06	6.48
7.27	32.39	-5.11	117	0.47	0.20

TABLE 21

YEAR ONE READING TEST SCORE IMPACTS

	Scholarship Offered (1)	Control Group (2)	Scholarship Offer Impact (3)	(N) (4)	Scholarship User (5)	Control Group Complier (6)	Switch to Private School (7)	(N) (8)
All students:								
Overall – Average	25.79	24.75	1.04	1456	25.38	23.96	1.42	1450
Grade 3	25.90	23.45	2.45	371	26.24	22.79	3.45	370
Grade 4	22.08	24.87	-2.79	396	21.57	25.50	-3.93	393
Grade 5	28.93	28.68	0.24	395	28.49	28.24	0.25	394
Grade 6	26.77	22.25	4.52**	294	25.75	19.82	5.93**	293
African American students:								
Overall – Average	25.62	22.10	3.53**	624	26.02	21.46	4.56**	623
Grade 3	28.22	22.40	5.82	153	28.18	20.40	7.78	153
Grade 4	21.74	25.47	-3.73	180	21.28	26.08	-4.80	179
Grade 5	24.81	22.43	2.38	167	26.39	23.16	3.23	167
Grade 6	28.43	19.47	8.97***	124	28.93	28.64	10.29**	124
Hispanic students:								
Overall – Average	23.94	24.64	-0.70	709	22.54	23.55	-1.01	704
Grade 3	23.67	21.51	2.16	188	22.40	19.13	3.27	187
Grade 4	19.58	22.51	-2.93	184	17.99	22.37	-4.38	182
Grade 5	28.44	28.34	0.10	196	27.57	27.49	0.08	195
Grade 6	24.51	22.45	2.06	141	22.12	19.23	2.89	140

See notes to Tables 5 and 18.

TABLE 22

YEAR ONE MATH TEST SCORE IMPACTS

	Scholarship Offered (1)	Control Group (2)	Scholarship Offer Impact (3)	(N) (4)	Scholarship User (5)	Control Group Complier (6)	Switch to Private School (7)	(N) (8)
All students:								
Overall – Average	24.73	23.31	1.42	1456	23.27	21.36	1.90	1450
Grade 3	20.05	16.78	3.27	371	20.21	15.46	4.75	370
Grade 4	20.36	22.61	-2.25	396	18.28	21.26	-2.97	393
Grade 5	31.15	27.28	3.87	395	29.93	24.73	5.20	394
Grade 6	29.29	24.40	4.89*	294	26.34	19.99	6.35*	293
African-American students:								
Overall – Average	23.43	18.01	5.42***	624	22.68	15.67	7.01***	623
Grade 3	20.54	11.65	8.89***	153	21.14	9.25	11.89***	153
Grade 4	19.24	19.20	0.05	180	17.02	17.09	-0.07	179
Grade 5	26.87	21.52	5.35	167	27.07	19.82	7.25	167
Grade 6	29.38	20.39	8.99**	124	27.61	17.28	10.32**	124
Hispanic students:								
Overall – Average	24.19	24.82	-0.63	709	22.58	23.60	-1.02	704
Grade 3	19.74	18.06	1.68	188	19.68	17.03	2.64	187
Grade 4	19.03	20.18	-1.15	184	16.97	18.69	-1.72	182
Grade 5	30.91	26.78	4.13	196	29.79	24.62	5.17	195
Grade 6	28.98	32.59	-3.60	141	24.64	29.55	-4.91	140

See notes to Tables 5 and 18.

APPENDIX A

BASELINE CHARACTERISTICS FOR TREATMENT AND CONTROL GROUPS

TABLE A-1

BASELINE CHARACTERISTICS FOR TREATMENT AND CONTROL GROUPS
(Mean Values Reported)

Variable	Control group	Treatment group	Difference	t-stat	Sig.
Grade of Student ('96-'97)					
Kindergarten	0.17	0.16	0.01	0.62	
First	0.18	0.20	-0.01	-0.76	
Second	0.22	0.21	0.01	0.42	
Third	0.23	0.23	0.00	0.25	
Fourth	0.20	0.20	-0.01	-0.53	
Years student attended this school	2.47	2.39	0.08	1.37	
Satisfaction with aspects of current school					
Location	2.94	3.00	-0.06	-1.44	
School Safety	2.75	2.79	-0.04	-1.01	
Teaching	2.70	2.66	0.04	1.07	
How much school involves parents	2.72	2.72	0.01	0.24	
Class sizes	2.32	2.34	-0.01	-0.34	
School Facilities	2.63	2.61	0.02	0.61	
Student respect of teachers	2.86	2.89	-0.03	-0.77	
Parent-teacher communication	2.81	2.81	0.01	0.14	
Observation of religious traditions	2.31	2.24	0.07	1.71	
Student in gifted classes	0.12	0.12	0.00	0.21	
Student received help for disability	0.10	0.12	-0.02	-1.28	
Mother's educational expectations for child (10=some HS, 12=HS grad, 14=some college, 16=college grad, 18=more than college)	16.67	16.76	-0.09	-1.07	
Education level of mother or female guardian					
Some high school (did not graduate)	0.22	0.21	0.01	0.44	
High school graduate or GED	0.27	0.25	0.02	0.78	
Some college	0.40	0.41	-0.01	-0.34	
Graduated from 4-year college	0.07	0.08	-0.01	-0.91	
More than 4-year college degree	0.03	0.03	0.00	0.33	
Don't know	0.01	0.02	-0.01	-1.45	
Race/ethnicity of mother/female guardian					
White	0.05	0.06	-0.01	-1.08	
Black	0.44	0.47	-0.02	-0.91	
Puerto Rican	0.21	0.18	0.03	1.48	
Hispanic other than Puerto Rican	0.27	0.25	0.02	0.83	
Other	0.03	0.05	-0.01	-1.28	

TABLE A-1 (*continued*)

Variable	Control group	Treatment group	Difference	t-stat	Sig.
Birth place of mother/female guardian					
Born in United States	0.61	0.59	0.02	0.84	
Born in Puerto Rico	0.09	0.08	0.01	0.80	
Born outside U.S. and Puerto Rico	0.30	0.33	-0.03	-1.37	
Length of residence of mother in months	36.09	35.89	0.20	0.36	
Job status of mother/female guardian					
Full-time job	0.22	0.22	0.00	0.00	
Part-time job	0.15	0.16	-0.02	-0.96	
Not working now but looking for work	0.46	0.47	-0.01	-0.32	
Not working and not looking for work	0.15	0.14	0.02	0.91	
Don't know	0.02	0.01	0.01	1.46	
Religious affiliation of female guardian					
Catholic	0.52	0.51	0.01	0.56	
Religion other than Catholic	0.42	0.44	-0.02	-0.91	
None	0.06	0.05	0.01	0.76	
Number of children in home	2.38	2.34	0.05	0.86	
In child's home (percent saying yes):					
A daily newspaper	0.84	0.85	-0.01	-0.57	
An encyclopedia	0.71	0.71	-0.01	-0.24	
A dictionary	0.98	0.97	0.01	0.83	
More than 50 books	0.85	0.85	0.00	-0.20	
Member of household receiving assistance:					
Food stamps	0.67	0.66	0.01	0.62	
Welfare	0.58	0.57	0.01	0.36	
Social Security	0.11	0.11	0.00	-0.01	
Medicaid	0.66	0.63	0.04	1.63	
Supplemental Security Income	0.14	0.13	0.00	0.06	
Family income	9450.23	9466.92	-16.69	-0.05	
Reading Achievement Scores					
Overall	24.52	22.88	1.64	1.58	
1st grade cohort	27.29	22.02	5.27	2.39	**
2nd grade cohort	25.05	25.10	-.05	-.02	
3rd grade cohort	21.03	20.35	.67	.40	
4th grade cohort	24.80	24.40	.40	.18	
Math Achievement Scores					
Overall	17.12	17.06	0.05	0.06	
1st grade cohort	11.88	10.83	1.05	.74	
2nd grade cohort	19.14	19.51	.37	.23	
3rd grade cohort	17.16	16.66	.51	.26	
4th grade cohort	21.32	22.79	1.47	.57	
English spoken at home	0.75	0.78	-0.03	-1.45	

Source: fay30300.xls,fay30713.do

TABLE A-2

DIFFERENCES IN BASELINE CHARACTERISTICS FOR RESPONDENTS AND NON-RESPONDENTS IN SECOND FOLLOW-UP: TREATMENT GROUP
(Mean Values Reported)

Variable	Respondents	Non-Respondent	Difference	t-stat	Sig
Grade of Student ('96-'97)					
Kindergarten	0.16	0.12	0.05	1.86	_
First	0.18	0.21	-0.03	-1.10	_
Second	0.21	0.21	0.00	-0.07	_
Third	0.23	0.26	-0.02	-0.71	_
Fourth	0.21	0.21	0.01	0.20	_
Years student attended this school	2.46	2.37	0.09	0.97	_
Satisfaction with aspects of current school					
Location	3.03	2.93	0.10	1.57	_
School Safety	2.81	2.62	0.19	2.90	***
Teaching	2.66	2.58	0.08	1.34	_
How much school involves parents	2.72	2.57	0.15	2.54	**
Class sizes	2.35	2.26	0.08	1.27	
School Facilities	2.61	2.52	0.09	1.56	_
Student respect of teachers	2.91	2.71	0.19	2.98	***
Parent-teacher communication	2.84	2.7	0.14	2.21	**
Observation of religious traditions	2.25	2.25	0.00	0.00	
Student in gifted classes	0.11	0.13	-0.02	-1.00	_
Student received help for disability	0.11	0.15	-0.04	-1.58	_
Mother's educational expectations for child (10=some HS, 12=HS grad, 14=some college, 16=college grad, 18=more than college)	16.77	16.55	0.22	1.63	_
Education level of mother or female guardian					
Some high school (did not graduate)	0.24	0.21	0.03	1.05	_
High school graduate or GED	0.24	0.27	-0.04	-1.05	_
Some college	0.40	0.40	0.00	0.01	_
Graduated from 4-year college	0.07	0.07	0.00	0.22	_
More than 4-year college degree	0.03	0.03	-0.01	-0.57	_
Don't know	0.02	0.01	0.01	0.60	_
Race/ethnicity of mother/female guardian					
White	0.03	0.08	-0.05	-2.65	***
Black	0.45	0.53	-0.09	-2.30	**
Puerto Rican	0.18	0.18	0.00	-0.01	_
Hispanic other than Puerto Rican	0.29	0.18	0.11	3.76	***
Other	0.05	0.03	0.02	1.78	*

TABLE A-2 *(continued)*

Variable	Respondents	Non-Respondents	Difference	t-stat	Sig.
Birth place of mother/female guardian					
Born in United States	0.57	0.67	-0.10	-2.65	***
Born in Puerto Rico	0.08	0.08	0.00	-0.02	
Born outside U.S. and Puerto Rico	0.35	0.25	0.10	2.80	***
Length of residence of mother in months	36.73	34.27	2.45	2.53	**
Job status of mother/female guardian					
Full-time job	0.22	0.19	0.03	1.02	
Part-time job	0.16	0.15	0.00	0.16	
Not working now but looking for work	0.44	0.52	-0.08	-2.13	**
Not working and not looking for work	0.16	0.12	0.04	1.71	*
Don't know	0.01	0.01	0.00	0.19	
Religious affiliation of female guardian					
Catholic	0.53	0.43	0.10	2.63	***
Religion other than Catholic	0.43	0.49	-0.06	-1.57	
None	0.04	0.08	-0.04	-2.08	**
Number of children in home	2.43	2.42	0.01	0.08	
In child's home (percent saying yes):					
A daily newspaper	1.16	1.15	0.01	0.21	
An encyclopedia	1.30	1.29	0.01	0.25	
A dictionary	1.03	1.03	0.00	-0.12	
More than 50 books	1.15	1.17	-0.01	-0.48	
Member of household receiving assistance:					
Food stamps	0.65	0.72	-0.07	-2.14	**
Welfare	0.55	0.64	-0.09	-2.52	**
Social Security	0.12	0.11	0.01	0.37	
Medicaid	0.63	0.68	-0.05	-1.47	
Supplemental Security Income	0.15	0.15	0.00	-0.01	
Family income	9875	8451.54	1423.46	2.91	***
Reading Achievement Scores					
Overall	22.34	21.92	0.42	0.23	
1st grade cohort	22.80	22.80	0.00	0.00	
2nd grade cohort	23.44	23.27	0.17	0.04	
3rd grade cohort	19.59	19.07	0.52	0.18	
4th grade cohort	24.04	23.26	0.78	0.21	
Math Achievement Scores					
Overall	17.29	16.03	1.26	0.72	
1st grade cohort	9.68	10.17	-0.50	-0.18	
2nd grade cohort	20.54	17.25	3.29	1.02	
3rd grade cohort	17.41	13.77	3.63	1.30	
4th grade cohort	19.81	23.50	-3.69	-0.78	
English spoken at home	0.75	0.84	-0.10	-3.26	***

Source: fay30903.xls,fay30903.do

TABLE A-3

DIFFERENCES IN BASELINE CHARACTERISTICS FOR RESPONDENTS AND NON-RESPONDENTS IN SECOND FOLLOW-UP: CONTROL GROUP
(Mean Values Reported)

Variable	Respondents	Non-Respondents	Difference	t-stat	Sig.
Grade of Student ('96-'97)					
Kindergarten	0.16	0.16	0.01	0.27	
First	0.19	0.13	0.06	2.20	**
Second	0.21	0.23	-0.02	-0.74	
Third	0.23	0.25	-0.02	-0.48	
Fourth	0.19	0.22	-0.03	-0.87	
Years student attended this school	2.47	2.55	-0.08	-0.88	
Satisfaction with aspects of current school					
Location	2.92	2.86	0.06	0.85	
School Safety	2.74	2.62	0.12	1.85	*
Teaching	2.70	2.59	0.11	1.76	*
How much school involves parents	2.75	2.60	0.15	2.56	***
Class sizes	2.35	2.22	0.13	1.93	*
School Facilities	2.62	2.55	0.07	1.07	
Student respect of teachers	2.86	2.74	0.12	1.90	*
Parent-teacher communication	2.82	2.71	0.11	1.72	*
Observation of religious traditions	2.32	2.21	0.11	1.51	
Student in gifted classes	0.11	0.12	-0.01	-0.56	
Student received help for disability	0.12	0.08	0.04	1.80	*
Mother's educational expectations for child (10=some HS, 12=HS grad, 14=some college, 16=college grad, 18=more than college)	16.66	16.73	-0.07	-0.55	
Education level of mother or female guardian					
Some high school (did not graduate)	0.23	0.23	0.00	-0.08	
High school graduate or GED	0.28	0.26	0.02	0.68	
Some college	0.39	0.39	0.01	0.17	
Graduated from 4-year college	0.06	0.09	-0.03	-1.53	
More than 4-year college degree	0.03	0.02	0.01	0.85	
Don't know	0.01	0.02	-0.01	-0.58	
Race/ethnicity of mother/female guardian					
White	0.03	0.03	0.00	0.38	
Black	0.42	0.49	-0.08	-2.07	**
Puerto Rican	0.22	0.21	0.01	0.28	
Hispanic other than Puerto Rican	0.31	0.21	0.09	3.01	***
Other	0.02	0.05	-0.03	-2.07	**

TABLE A-3 (*continued*)

Variable	Respondents	Non-Respondents	Difference	t-stat	Sig
Birth place of mother/female guardian					
Born in United States	0.60	0.66	-0.06	-1.57	
Born in Puerto Rico	0.10	0.07	0.03	1.49	
Born outside U.S. and Puerto Rico	0.30	0.27	0.03	0.74	
Length of residence of mother in months	36.67	36.03	0.64	0.74	
Job status of mother/female guardian					
Full-time job	0.21	0.22	-0.02	-0.52	
Part-time job	0.14	0.16	-0.02	-0.58	
Not working now but looking for work	0.46	0.45	0.02	0.44	
Not working and not looking for work	0.17	0.14	0.03	1.04	
Don't know	0.02	0.03	-0.01	-0.97	
Religious affiliation of female guardian					
Catholic	0.57	0.48	0.09	2.56	**
Religion other than Catholic	0.38	0.47	-0.09	-2.50	**
None	0.05	0.05	0.00	-0.16	
Number of children in home	2.41	2.51	-0.11	-1.06	
In child's home (percent saying yes):					
A daily newspaper	1.16	1.15	0.01	0.37	
An encyclopedia	1.30	1.29	0.01	0.22	
A dictionary	1.02	1.02	0.00	-0.44	
More than 50 books	1.15	1.15	0.00	0.10	
Member of household receiving assistance:					
Food stamps	0.67	0.71	-0.04	-1.13	
Welfare	0.58	0.63	-0.05	-1.30	
Social Security	0.12	0.09	0.03	1.28	
Medicaid	0.67	0.67	0.01	0.19	
Supplemental Security Income	0.16	0.09	0.07	2.63	***
Family income	9303.63	9330.68	-27.05	-0.05	
Reading Achievement Scores					
Overall	23.83	23.83	0.00	0.00	
1st grade cohort	26.25	33.30	-7.05	-1.69	*
2nd grade cohort	25.67	20.62	5.05	1.34	
3rd grade cohort	20.99	19.50	1.49	0.58	
4th grade cohort	22.98	25.56	-2.58	-0.74	
Math Achievement Scores					
Overall	17.37	17.02	0.35	0.22	
1st grade cohort	10.47	17.51	-7.04	-2.43	**
2nd grade cohort	19.95	16.22	3.72	1.28	
3rd grade cohort	17.87	13.35	4.52	1.57	
4th grade cohort	20.76	21.53	-0.76	-0.19	
English spoken at home	0.73	0.81	-0.07	-2.42	**

Source: fay30903.xls,fay30903.do

Appendix B

Adjusting Sample Weights for Non-Response

Adjusting Sample Weights for Non-Response

Families within the sample had different probabilities of being offered a scholarship. To reflect these differences in the probability of selection and to reflect the composition of the population of eligible applicants, we weight the sample data. The weights were constructed by taking the inverse of the probability of being selected for a scholarship. Weights for scholarship families were multiplied by .217 and weights for control group families were multiplied by .783 to reflect the ratio of treatment to control group families in the initial pool of eligible applicants.[1] All weights were divided by 2 to sum to the size of the population we are trying to represent, not twice the population. In this sample, the average weight was about 4.2. A family with a weight of 4.2 stands in for 3.2 other families in the pool of applicants as well as itself. The weights, which were adjusted for the same family applying multiple times, range in size from about .5 to 22.

About 18 percent of all families in the first year and 26 percent of families in the second year did not complete a survey. To adjust for this non-response, we computed the probability of responding based on a logit model. The independent variables in the logit model included family characteristics such as race/ethnicity, number of siblings, language spoken at home, mother's education, and family income, and other variables used to stratify the sample when we collected the baseline data. After computing the predicted probability of responding, we adjusted the baseline weight as follows:

$$W_i = 1/[f_i * p_i * pr_i]$$

where f_i includes the adjustment factors used for deriving the baseline weight[2], p_i is the probability of being selected for a scholarship (control group), pr_i is the probability of responding for each follow-up survey, and W_i is the new weight variable. Families that did not respond to the follow-up survey were assigned a weight of zero.

For the second year student data, we found that 66 percent of the students responded to the survey and that we had test scores for 66 percent. During the previous round of data collection, 75 percent of students completed the survey and 78 percent took the achievement test. To adjust the weights for the student level data, we followed the same procedures that were used for the parent data.

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[1] The control group was reduced to 1,293 students from the initial eligible population of 5,658 and the treatment group was reduced from 1,558 to 1,374 students. The weights for the reduced sample were re-scaled to sum to the initial eligible population.

[2] The adjustment factors are as follows: 1) five discrete points at which families applied for scholarships; 2) whether a child attended a public school with below average achievement; 3) the number of eligible children within the family.

Appendix C

Analytic Approach

Analytic Approach

For some analysts and program operators, the important policy question is as follows: what happens when a voucher or scholarship program is put into effect? But other analysts also want an answer to a second question: what is the impact of attending a private school? Angrist, Imbens, and Rubin (1996) make some interesting distinctions between the two estimators used to address these two different questions. We refer to the first estimator as the intended to treat (ITT) estimator and the second as the complier average causal effect estimator (CACE). The most important issues concerning the ITT estimator, which compares all children randomly assigned to the scholarship group with all children randomly assigned to the control group, are that among the children who are assigned to the two groups are children who are induced by the offer of a scholarship to attend a private school, children who would have made the decision to attend a private school regardless of the scholarship offer, and children who would never attend a private school. The CACE estimator provides an estimate of the impact of the scholarship for only those who were or would have been induced by the offer of a scholarship to attend private school. Children who would have attended a private school regardless of the offer of a scholarship and those who would have opted to not attend irrespective of the scholarship do not play a direct role in the estimated impact with the CACE estimator.

Computing Impacts of Being Offered a Scholarship (ITT)

To compute the impact of being offered a scholarship we use a simple statistical model that includes as independent variables an indicator for treatment status (offered a scholarship or in the control group) and a set of indicators that show the stratum from which a family was selected. The strata are based on (1) five discrete points at which families applied for scholarships, (2) whether a child attended a public school with below average achievement, and (3) the number of eligible children within the family. When computing the impact on student achievement test scores, we also included student baseline reading and math achievement. The basic form of the model is:

$$y_{1i} = \beta_0 + \beta_1 T_i + \beta_2 X_i + \varepsilon_{1i}$$
$$y_{2i} = \beta_3 + \beta_4 T_i + \beta_5 X_i + \varepsilon_{2i}$$

where T_i equals 1 if we offered a family a scholarship and 0 otherwise (families were randomly selected for the scholarship and control groups); X_i is a vector that includes indicator variables for each of the strata used in the random selection of scholarship families and baseline test scores when computing impacts on achievement. The outcomes of interest are y_{1i} and y_{2i}. The former is the first year test score and the latter is the second year test score. The random error terms, ε_{1i} and ε_{2i}, capture the effects of unobserved factors that influence the outcomes; and the β's are parameters or vectors of parameters to be estimated. The parameters of most interest are β_1 and β_4 because they show the impact of being offered a scholarship on the outcome for year 1 and year 2, respectively. We estimate the model parameters by using ordinary least squares for both categorical and continuous outcomes.

Computing the Complier Average Causal Effect (CACE)

A simple comparison of an outcome for families in the scholarship group (those whom we offered a scholarship) and the control group shows the impact of *being offered a scholarship*, regardless of whether a family sent their child to a private/parochial school or not.

To compute the CACE estimator for the impact of attending a private school, we need to estimate a statistical model that focuses on (1) the relationship between being offered a scholarship and attending private school and (2) the relationship between attending private school and family and student outcomes. These relationships can be expressed as:

$$P_{1i} = \alpha_0 + \alpha_1 T_i + \alpha_2 X_i + \varepsilon_{p1i}$$
$$y_{1i} = \beta_0 + \beta_1 P_{1i} + \beta_2 X_i + \varepsilon_{y1i}$$
$$P_{2i} = \alpha_3 + \alpha_4 T_i + \alpha_5 X_i + \varepsilon_{p2i}$$
$$y_{2i} = \beta_3 + \beta_4 P_{i2} + \beta_5 X_i + \varepsilon_{y2i}$$

where T_i equals 1 if we offered a family a scholarship and 0 otherwise (families were randomly selected for the scholarship and control groups); X_i is a vector that includes indicator variables for each of the stratum used in the random selection of scholarship families and baseline test scores when computing impacts on achievement; P_{1i} if attended a private school in year one and P_{2i} equal 1 if a family attended a private school in year one and year two, and 0 otherwise; y_{1i} and y_{2i} are the outcomes of interest; ε_{p1i}, ε_{y1i}, ε_{p2i} and ε_{y2i} are random error terms that capture the effects of unobserved factors that influence both private school attendance and the outcome; and α's and β's are parameters or vectors of parameters to be estimated.[1] We allow for across equation error correlations only within time periods. The parameters of most interest are β_1 and β_4 because they show the impact of attending a private school on the outcome.[2]

We estimate the model parameters by using the instrumental variables estimator. This technique allows us to compute asymptotically unbiased and efficient estimates of the parameters; which can be interpreted as the causal impact for compliers (students that were induced to attend a private school by the scholarship offer) using the framework developed by

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[1] For analyses of the parent and student survey data, we focused in attendance at a private school in year two only. In this case, P_{i2} = 1 if attended a private school in year 2, and 0 otherwise.

[2] As already described in the report, we used two definitions of private school attendance when analyzing the test scores: (1) ever attend a private school, and (2) attended a private school for two years. We discuss the results of attending for two years in the report (Appendix E shows results for ever attending, which are quite close to the estimates of attending for two years). The impacts for ever attending are implemented by making a small adjustment to the analytic models described in this appendix.

Angrist, Imbens, and Rubin, 1996. To implement the instrumental variables estimator, we use the two-stage least squares procedure.

In our tables we present (1) the impact of attending private school, (2) the average of each outcome for families or students in the scholarship group that attended private school (complied), and (3) the average of outcomes for families or students in the control group who would have attended a private school if offered a scholarship. The first quantity is obtained from the statistical model described previously. The average for compliers in the scholarship group is computed by adding the impact of attending private school to the average for members of the control group who would have complied. To compute the last quantity, we can use an alternative expression for computing the impacts of private school attendance (compliance):

$$E(y^T_t / P_t = 1) - E(y^C_t / P_t = 1) = [E(y^T_t) - E(y^C_t)]/Pr(P_t = 1)$$

$$E(y^C_t / P_t = 1) = E(y^T_t / P_t = 1) - [E(y^T_t) - E(y^C_t)]/Pr(P_t = 1)$$

where t is time and $[E(y^T_1) - E(y^C_1)]/Pr(P_1 = 1) = \beta_1$ for $t = 1$ and $[E(y^T_2) - E(y^C_2)]/Pr(P_2 = 1) = \beta_4$ for $t = 2$.[3] The last expression tells us that the average of each outcome for controls, which is unobserved, can be computed from known quantities.

Model Specification for Looking at Cohort Specific Impacts and Between Year Impacts on Reading and Math Achievement

Our analyses examined three hypotheses:

- Average impacts on student and family outcomes were the same in year one and year two;
- Cohort-specific impacts on students' reading and math achievement test scores were similar within year 1 and within year 2;
- Cohort-specific impacts on students' reading and math achievement test scores were similar across years.

To test these hypotheses we constructed functions of the impact estimates and computed the standard errors of these functions using the bootstrap method. The specific functions are listed in Tables C1 and C2.

We used the bootstrap to compute direct estimates of the standard errors for several reasons. First, some analyses involve using more than one child from each family, which produces

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[3] This expression for program impacts draws on Bloom's earlier work (1984).

clustering in the sample. To adjust for the clustering, we sampled families instead of children when constructing the bootstrap samples. Second, the estimation of the private school impacts involved the use of the IV estimator and is complicated by the implicit presence of interaction terms in the model when comparing across time impacts or between cohort impact estimates. To make these comparisons, we computed the functions in Tables C1 and C2 for each bootstrap sample and then computed the standard errors of the functions after 1,000 samples were formed and the models and functions were estimated.

To statistically test the hypotheses that involved making multiple comparisons, we used the Bonferroni procedure. The Bonferonni allows us to control the probability of making a type 1 error when making multiple comparisons. To use the Bonferonni, we can take the probability of making a type 1 error for a z-test, for example, and divide it by the number of comparisons made. For example, if the probability is .10 and we are making 4 comparisons, then the critical value used for each comparison should be the value associated with a type 1 error of .025. By dividing by the number of planned comparisons, we implicitly set the probability of making one or more type 1 errors among the planned comparisons in this set to 0.10. This should be about equivalent to using an F-test in the usual setting when we want to test for differences among 2 or more means.

TABLE C1

FUNCTIONS OF IMPACT ESTIMATES FOR COHORT SPECIFIC IMPACTS WITHIN YEARS[a]

Parameters of Interest	Interpretation
$\Delta_1 = I_{11} - I_{12}$	Difference in impacts for cohorts 1 and 2—year 1
$\Delta_2 = I_{11} - I_{13}$	Difference in impacts for cohorts 1 and 3—year 1
$\Delta_3 = I_{11} - I_{14}$	Difference in impacts for cohorts 1 and 4—year 1
$\Delta_4 = I_{21} - I_{22}$	Difference in impacts for cohorts 1 and 2—year 2
$\Delta_5 = I_{21} - I_{23}$	Difference in impacts for cohorts 1 and 3—year 2
$\Delta_6 = I_{21} - I_{24}$	Difference in impacts for cohorts 1 and 4—year 2

[a]Cohort specific impacts only refer to analyses of achievement test score impacts and not to analyses of family and student survey data.

To assess whether overall impacts and cohort specific impacts changed between years, we computed some additional estimates as indicated in Table C2.

TABLE C2

FUNCTIONS OF IMPACT ESTIMATES FOR BETWEEN YEAR COMPARISONS

Parameters of Interest	Interpretation
$\Delta_1 = I_{11} - I_{21}$	Difference in impacts for year 1 and 2 for cohort 1
$\Delta_2 = I_{12} - I_{22}$	Difference in impacts for year 1 and 2 for cohort 2
$\Delta_3 = I_{13} - I_{23}$	Difference in impacts for year 1 and 2 for cohort 3
$\Delta_4 = I_{14} - I_{24}$	Difference in impacts for year 1 and 2 for cohort 4
$\Delta_5 = I_{1Overall} - I_{2Overall}$	Difference in impacts for year 1 and 2 overall

The standard errors of these differences were computed using the bootstrap method and we tested for overall differences using the Bonferonni procedure.

APPENDIX D

SUPPLEMENTAL TABLES COMPARING YEAR 1 FINDINGS TO YEAR 2 FINDINGS[a]

[a]Appendix D explains how the between year comparisons were tested. Tables are numbered to correspond to the tables presenting the second year results in the body of the report. For example, Table 5 in the report has a supplemental table in this appendix titled Table S5.

	Year One						
	Scholarship Offered	Control Group	Scholarship Offer Impact	Scholarship Uses	Control Group Complier	Switch to Private School	Scholarsh Offered
Average school size	377	498	-121***	346	509	-163***	403
Average class size	24	26	-2***	24	27	-1***	25
Percentage very satisfied with school facilities	37	15	22***	40	10	30***	30
Percentage with the following resources							
Special program for non-English speakers	53	76	-23***	47	79	-32***	52
Special programs for learning disabled	66	77	-11***	62	78	-16***	63
Nurses' office	82	93	-11***	79	95	-16***	79
Child counselor	78	83	-5**	76	83	-7**	77
Library	88	94	-6***	87	95	-8***	89
Cafeteria	90	96	-6***	89	97	-8***	90
Special programs for advanced learners	63	58	5	62	55	7	53
After-school program	91	86	5***	93	86	7***	91
Gym	92	90	2	91	88	3	91
Arts program	81	76	5**	79	73	6**	81
Computer lab	88	83	5**	88	81	7**	89
Music program	80	74	6**	80	72	8**	83
Individual tutors	61	54	7**	59	50	9**	58
(N)	1015-1566			1015-1566			589-13

See notes to Tables 5 and 18.

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	Year Two					Impact Differences Between Year One and Two	
p	Control Group	Scholarship Offer Impact	Scholarship User	Control Group Complier	Switch to Private School	For Scholarship Offered	For Scholarship User
	498	-96***	355	525	-140***	-25	-23
	26	-1**	25	27	-2***	-1**	-2
	10	28***	33	5	28***	2	2
	76	-24***	44	80	-36***	2	4
	78	-11***	58	74	-16***	0	0
	94	-15***	75	96	-21***	3	5
	83	-6*	75	83	-8**	1	2
	93	-4	88	93	-5**	-2	-3
	96	-6***	90	98	-8***	0	0
	55	-5	48	55	-7	9*	14*
	90	1	92	90	2	3	5
	90	1	91	89	2	1	2
	81	0	80	79	1	2	3
	84	-1	90	83	7**	0	0
	77	6*	84	75	9***	-1	-1
	49	9*	57	45	12***	-2	-3
s			589-1399				

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Table S6: Ethnic and Racia

	Year One						
	Scholarship Offered	Control Group	Scholarship Offer Impact	Scholarship User	Control Group Complier	Switch to Private School	Scholarship Offered
What percentage of students in child's class are minority?							
Less than half	16	12	4**	16	10	6**	13
About half	20	22	-2	18	21	-3	22
More than half	32	29	3	34	30	4	35
Everyone	31	36	-5*	32	39	-7*	30
Total	99	99		100	100		100
(N)	1555			1555			1402

See notes to Tables 5 and 15.

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Isolation in Classroom

Year Two					Impact Differences Between Year One and Two	
Control Group	Scholarship Offer Impact	Scholarship User	Control Group Complier	Switch to Private School	For Scholarship Offered	For Scholarship User
12	1	13	11	2	1	4
24	1	25	24	1	-3	-4
31	4	33	27	6	-1	2
36	-6	30	38	8**	1	2
100		101	100			
		140				

Table S7: Special Education

	Year One						
	Scholarship Offered	Control Group	Scholarship Offer Impact	Scholarship User	Control Group Complier	Switch to Private School	Scholarship Offered
Children with physical disabilities	4	3	1	3	1	2	4
Children with learning disabilities	11	11	0	10	10	0	10
Enrolled in ESL course	8	9	-1	7	9	-2	4
Percentage who believe school is doing "very well" at attending to these needs [1]							
Physical disabilities	27	15	12	18	2	16	35
Learning disabilities	43	33	8	37	26	11	30
ESL	69	44	25***	74	35	39***	31
(N)	51-1601			51-1601			55-1425

See notes to Tables 5 and 18.

[1] These figures are calculated as a percent of those parents with disabled or non-English speaking children, not as a percent o

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Facilities and Programs

Year Two					Impact Differences Between Year One and Two	
Control Group	Scholarship Offer Impact	Scholarship User	Control Group Complier	Switch to Private School	For Scholarship Offered	For Scholarship User
2	2	3	1	2*	0	-1
10	10	9	9	0	0	0
5	-1	3	5	-2	0	0
47	-12	31	62	-29	24	45
24	6	26	16	10	2	1
28	3	25	19	6	22	11
		55-1425				

the centre population

Table S8: Parent's P

	Year One						
	Scholarship Offered	Control Group	Scholarship Offer Impact	Scholarship User	Control Group Complier	Switch to Private School	Scho...
Parents report as serious problem							
Fighting	44	66	-22***	40	70	-30***	
Tardiness	41	58	-17***	39	62	-23***	
Kids missing class	37	50	-13***	34	52	-18***	
Kids destroy property	32	45	-13***	30	48	-18***	
Cheating	35	43	-8***	34	44	-10***	
Racial Conflict	32	39	-7***	31	41	-10***	
Parents report on school rules							
School uniform	86	35	51***	90	30	60***	
Certain forms of dress forbidden	87	53	34***	94	47	47***	
Visitors must sign in at main office	82	94	-13***	81	98	-17***	
Hall passes required to leave class	74	86	-12***	69	86	-17***	
(N)	1331-1571			1331-1571			121

See notes to Tables 5 and 18.

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rception of School Climate

	Year Two					Impact Differences Between Year One and Two	
arship ered	Control Group	Scholarship Offer Impact	Scholarship User	Control Group Complier	Switch to Private School	For Scholarship Offered	For Scholarship User
0	66	-26***	33	70	-37***	4	6
9	59	-20***	33	62	-29***	4	8
4	52	-18***	29	54	-25***	4	7
9	42	-13***	27	45	-18***	0	1
1	30	-9**	29	42	-13***	2	3
7	37	-10***	26	41	-15***	3	5
4	47	32***	96	43	53***	14	17
7	65	22***	95	64	31***	12	16
8	94	-6***	86	95	-9***	-6	-8
7	86	-9***	74	86	-12***	-4	-5
-1397			1214-1397				

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Table S9: Student's Perce

	Year One						
	Scholarship Offered	Control Group	Scholarship Offer Impact	Scholarship User	Control Group Complier	Switch to Private School	Scholarshi Offered
Student reports							
Students are proud to attend this school	64	55	9**	66	55	11**	59
Behavior rules strict	69	61	8**	72	62	10**	67
Students get along with teachers	60	54	6*	60	53	7*	62
Feel "put down" by teachers	21	26	-5*	21	28	-7*	21
Teachers ignore cheating							17
There is a lot of cheating in this school							26
(N)	1037-1082			1037-1082			1209-127
Student reports on number of close friends who:							
Like school							4.04
Get good grades							4.68
Get into trouble with teachers							2.26
Use bad languages							1.89
Smoke cigarettes							0.15
(N)							1195-117

See notes to Tables 5 and 18.

[1] The index is scored 0 if child reports no close friends at school, 1.5 for 1 to 2 friends, 3.5 for 3 to 4 friends, 5.5 for 5 to

*Shaded areas indicate that a question was not asked on that year's survey or that the question was worded differently.

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ption of School Climate

	Year Two				Impact Differences Between Year One and Two	
Control Group	Scholarship Offer Impact	Scholarship User	Control Group Complier	Switch to Private School	For Scholarship Offered	For Scholarship User
54	5	58	52	6	4	6
62	8*	70	65	5	2	4
50	15***	64	49	15***	-6	-7
75	-4	20	24	-4	-1	-2
22	-5**	16	21	-7**	N/A	N/A
34	-8***	25	36	-11***	N/A	N/A
		1144-1211				
4.06	-0.02	4.01	4.04	-0.01	N/A	N/A
4.40	0.28*	4.69	4.30	0.38*	N/A	N/A
2.29	-0.03	2.33	2.37	-0.04	N/A	N/A
2.25	-0.36**	1.77	2.25	-0.48***	N/A	N/A
0.12	0.03	0.15	0.07	0.05	N/A	N/A
		1195-1175				

friends, and 7.5 for 7 or more friends

Table S10:

	Year One						
	Scholarship Offered	Control Group	Scholarship Offer Impact	Scholarship User	Control Group Compiler	Switch to Private School	Scholar Offer
Parents reports							
Child has more than one hour of homework	52	35	17***	57	34	23***	36
Homework too easy	9	16	-7***	8	15	-10***	7
(N)[1]	1572-1589			1572-1589			1430-1
Student reports							
Trouble keeping up with homework	28	23	5*	29	22	7*	25
Time spent on homework on typical night (in minutes)							80-8
Teachers return homework always or most of time	48	51	-3	47	51	-4	50
(N)[2]							1774-1

See notes to Tables 5 and 15.

[1] These values of (N) are drawn from the parent survey.

[2] These values of (N) are drawn from the student survey.

*Shaded areas indicate that a question was not asked on that year's survey or that the question was worded differently.

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Homework

		Year Two				Impact Differences Between Year One and Two	
	Control Group	Scholarship Offer Impact	Scholarship List	Control Group Complete	Switch to Private School	For Scholarship Offered	For Scholarship List
	44	16***	64	41	25***	1	0
	15	-11***	4	20	-16***	4	6
31			1416-1431				
	26	-4	22	28	-6	9**	13***
	443	54***	513	437	74***	N/A	N/A
	54	-3	49	55	-6	8	9
90*			1216-1295				

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Table S11: School Comm

	Year One						
	Scholarship Offered	Control Group	Scholarship Offer Impact	Scholarship User	Control Group Complier	Switch to Private School	Scholarsl Offere
Parents regularly informed about student grades	91	85	6***	91	82	9***	90
Parents receive notes from teacher	89	79	10***	90	77	13***	88
Parents receive newsletter	82	68	14***	82	63	20***	81
Parents speak to classes about jobs	44	35	9***	44	32	12***	37
Parents participate in instruction	63	51	12***	65	49	16***	62
Parent night	92	88	4**	92	87	5**	91
Regular Parent-Teacher Conferences	93	90	3**	93	89	4**	93
Notified of disruptive behavior	88	81	7***	91	81	10***	88
(N)	1219-1535			1219-1535			1137-1

See notes to Tables 5 and 18.

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unication With Parents

	Year Two					Impact Differences Between Year One and Two	
p	Control Group	Scholarship Offer Impact	Scholarship User	Control Group Compiler	Switch to Private School	For Scholarship Offered	For Scholarship User
	83	7***	94	84	10***	-1	-1
	79	9***	89	76	13***	1	1
	65	16***	85	62	23***	-2	-3
	28	9**	36	24	12***	0	0
	49	13***	63	44	19***	-1	-3
	88	3	92	88	4	1	2
	91	3	95	91	4*	1	1
	78	10***	91	77	14***	-2	-4
01			1137-1301				

LABLE

Table S12: Relig

	Year One						
	Scholarship Offered	Control Group	Scholarship Offer Impact	Scholarship User	Control Group Complier	Switch to Private School	Scholarship Offered
Student reports							
Religious instruction outside school	30	20	10***	34	20	14***	25
Attend religious services	61	38	23***	65	36	29***	55
Participate in church group	37	31	16***	52	32	20***	37
(N)	1047-1082			1042-1077			1248-1273

See notes to Tables 2 and 18.

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Year Two					Impact Differences Between Year One and Two	
Control Group	Scholarship Offer Impact	Scholarship User	Control Group Complier	Switch to Private School	For Scholarship Offered	For Scholarship User
16	9***	27	14	13***	2	1
35	20***	59	32	27***	4	2
38	9**	50	40	10**	7	10
		1184-1210				

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Table S13: Parental Involvet

	Year One						
	Scholarship Offered	Control Group	Scholarship Offer Impact	Scholarship User	Control Group Compiler	Switch to Private School	Scholarship Offered
Average number of times parents did the following:[1]							
Helped child with homework							11
Helped child with reading, math							10
Talked with child about school							13
Attend school activity w. child							8
Worked on school projects							6
(N)							139 142

See notes to Tables 5 and 18.

[1] The index is scored 0 if parent never participated in activity, 3 for 1 to 5 times, 8 for 6 to 10 times, 13 for 11 to 15 time

*Shaded areas indicate that a question was not asked on that year's survey or that the question was worded differently

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ıent in Child's Education

Year Two					Impact Differences Between Year One and Two	
Control Group	Scholarship Offer Impact	Scholarship User	Control Group Complier	Switch to Private School	For Scholarship Offered	For Scholarship User
12	0	11	12	0	NA	NA
10	0	10	10	0	NA	NA
14	0	13	14	-1	NA	NA
5	0	5	5	0	NA	NA
5	0	6	5	1	NA	NA
		1399-1424				

, and 18 for 16 or more times

Table S14: Student Adj

	Year One						
	Scholarship Offered	Control Group	Scholarship Offer Impact	Scholarship User	Control Group Complier	Switch to Private School	Scholars Offere
Number of close friends at school				•			6
Students who feel "made fun of" by other students	39	45	-6	40	47	-7	36
(N)	1062			1057*			1244 (2

See notes to Tables S and IS.

The index is scored 0 if child reports no close friends at school, 1.5 for 1 to 2 friends, 3.5 for 3 to 4 friends, 5.5 for 5 (

*Shaded areas indicate that a question was not asked on that year's survey or that the question was worded differently.

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stment to Choice Schools

	Year Two					Impact Differences Between Year One and Two	
up	Control Group	Scholarship Offer Impact	Scholarship User	Control Group Compiler	Switch to Private School	For Scholarship Offered	For Scholarship User
	5	0	6	5	0	NA	NA
	38	7	37	39	2	4	5
4			1178-1354				

6 friends, and 7.5 for 7 or more friends.

BLE

Table S15: Parental a

	Year One					
	Scholarship Offered	Control Group	Scholarship Offer Impact	Scholarship Used	Control Group Complier	Switch to Private School
Parental Satisfaction						
Observe religious traditions	44	13	31***	49	7	42***
Class size	37	13	24***	47	9	38***
Discipline	52	17	36***	58	11	47***
Academic quality	47	18	29***	51	11	40***
Student respect for teachers	51	21	30***	57	16	41***
Parental support	52	15	37***	41	8	33***
Teaching values	48	18	30***	52	12	40***
What taught in school	51	19	32***	56	12	44***
School safety	50	22	28***	54	15	39***
Teaching	53	23	30***	60	17	43***
Teacher-Parent Communication	51	24	27***	53	19	34***
Clarity school goals	40	14	26***	44	9	35***
Staff teamwork	38	16	22***	39	9	30***
Sports program	23	10	14***	25	7	18***
School facility	47	15	32***	40	10	30***
Parental Involvement	47	26	21***	49	17	32***
Location	50	33	17***	53	30	23***
Give school an "A"	44	15	29***	49	16	34***
(N)	1521-1680			1521-1680		
Student results						
Give school an "A"	49	43	6**	51	43	8***
Give school "D" or "F"	3	9	-6***	2	10	-8***
(N)	919			919		

See notes to Tables 5 and 18.

For the following measures we report the average of an index which is scored 1 for very dissatisfied, 2 for dis

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d Student Satisfaction With School

Year Two						Impact Differences Between Year One and Two	
Scholarship Offered	Control Group	Scholarship Offer Impact	Scholarship User	Control Group Complier	Switch to Private School	For Scholarship Offered	For Scholarship User
39	9	30***	47	5	42***	1	0
50	11	39***	51	7	37***	5	6
43	13	30***	47	5	42***	5	5
46	13	27***	44	5	39***	2	2
45	17	28***	50	11	39***	2	2
44	11	22***	37	6	31***	5	7
47	14	23***	40	7	33***	7	8
42	14	28***	47	7	40***	4	5
47	16	31***	52	9	43***	-2	5
47	18	29***	51	10	41***	1	2
53	22	21***	49	14	35***	5	6
53	12	21***	36	6	30***	5	6
50	12	18***	32	6	26***	4	4
20	8	12***	23	6	17***	1	1
36	10	26***	33	5	28***	2	2
33	17	16***	35	12	23***	1	0
50	32	18***	53	28	25***	1	-2
32	11	21***	38	9	29***	5**	10**
1354-1436			1354-1436				
52	46	6**	53	45	8**	0	0
4	9	-5***	4	11	-7***	-1	-1
1359			1359				

isfied, 3 for satisfied and 4 for very satisfied

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Table S16: Students Changi

	Year One						
	Scholarship Offered	Control Group	Scholarship Offer Impact	Scholarship User	Control Group Complier	Switch to Private School	Scholar Offer
Attended same school for entire school year	95	94	1	96	95	1	95
Reasons why did not attend same school for entire year							
Moved away	3	5	-2**	3	5	-2**	3
Quality of school	1	1	0	0	0	0	1
School too expensive	1	0	1**	1	0	1**	1
Suspended/expelled	0	0	0	0	0	0	0
Preferred public school	0	0	0	0	0	0	0
Inconvenient location	0	0	0	0	0	0	0
Preferred private school	0	0	0	0	0	0	1
(N)	1595-1600			1595-1600			143

See notes to Tables 5 and 18

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ng School During School Year

	Year Two					Impact Differences Between Year One and Two	
ship d	Control Group	Scholarship Offer Impact	Scholarship User	Control Group Compiler	Switch to Private School	For Scholarship Offered	For Scholarship User
	94	1	97	95	2	-1	-1
	2	0	1	1	0	-1	-2
	2	-1	0	2	-2	1	1
	1	0	1	0	1	0	0
	0	0	0	0	0	0	0
	0	0	0	0	0	0	0
	1	-1**	0	1	-1**	1**	2**
	1	0	0	0	0	0	0
			1436				

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Table S17: School Matriculatio

	Year One						
	Scholarship Offered	Control Group	Scholarship Offer Impact	Scholarship User	Control Group Complier	Switch to Private School	Scholarship Offered
Child will attend same school next year?	81	68	13***	87	70	17***	71
Reasons why student not attend same school next year							
Quality of school	6	8	-2	6	9	-3	6
Moving	0	1	-1	0	1	-1	5
Graduating	0	13	-13***	0	15	-15***	5
Preferred private school	0	1	-1	0	1	-1	2
Inconvenient location	0	0	0	0	-1	1	1
School too expensive	0	-1	1**	0	-2	2**	1
Children in same school	0	0	0	0	-1	1	1
Asked not to return	0	0	0	0	0	0	0
Preferred public school	0	1	-1**	0	1	-1**	1
(N)	1560			1560			1459

See notes to Tables 5 and 18.

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Plans for Next School Year

Year Two					Impact Differences Between Year One and Two	
Control Group	Scholarship Offer Impact	Scholarship User	Control Group Complier	Switch to Private School	For Scholarship Offered	For Scholarship User
56	15***	81	60	21***	-2	-4
8	-2	8	7	-3	0	0
5	0	4	4	0	-1	-1
16	-11***	2	17	-15***	-1	0
2	0	2	2	0	-1	-1
1	2**	3	1	3**	-1	-2
2	1	2	0	2	0	0
2	-1*	1	3	-2*	2**	2**
0	0	0	-1	1**	0	0
1	0	1	1	0	-1	-1
		1429				

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APPENDIX E

ESTIMATES OF EVER ATTENDING A PRIVATE SCHOOL

TABL

YEAR TWO COMPOSITE TEST
DIFFERENCES BETWEE
(Perc

	Scholarship Offered (1)	Control Group (2)	Scholarship Offer Impact (3)	(N)[g] (4)	Schol U (
All students:					
Overall – Average	25.37	24.91	0.46	1199	24
Grade 3	20.88	21.78	-0.90	307	20
Grade 4	26.01	27.70	-1.69	341	22
Grade 5	27.34	26.80	0.54	313	27
Grade 6	27.70	24.82	2.88	238	25
African-American students:					
Overall – Average	23.85	20.58	3.27**	497	24
Grade 3	22.89	21.05	1.85	118	23
Grade 4	23.61	25.54	-1.93	153	22
Grade 5	21.88	20.96	0.93	122	23
Grade 6	28.00	20.08	7.92***	104	28
Hispanic students:					
Overall – Average	24.81	25.42	-0.60	612	24
Grade 3	18.62	18.30	0.32	164	17
Grade 4	26.11	25.62	0.49	164	23
Grade 5	27.18	26.77	0.41	167	26
Grade 6	28.36	29.32	-0.96	117	30

NOTES:

See notes to Tables 5 and 18.

Alternative definition of private school attendance.

*Impact of offer is statistically significant at .1 level, two tailed test; **Impact of off
two-tailed test.

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E-1

ORE IMPACTS AND IMPACT
YEAR ONE AND TWO
tile)

ship r	Control Group Complier (6)	Switch to Private School (7)	(N) (8)	Impact Differences Between Year One and Two[h] For Scholarship Offered (9)	For Scholarship Users (10)
3	23.61	0.62	1199	0.77	1.04
1	22.12	-1.21	307	3.76*	5.31*
7	25.07	-2.30	341	-0.83	-1.15
2	27.05	0.76	313	1.51	1.96
7	22.13	3.83	238	1.83	2.31
0	19.90	4.29**	497	1.20	1.50
6	20.99	2.37	118	5.51	7.46
0	24.53	-2.43	153	0.09	-0.01
3	22.52	1.31	122	2.94	3.93
6	19.86	9.00***	104	1.06	1.31
9	25.01	-0.82	612	-0.06	-0.19
2	16.87	0.45	164	1.60	2.51
2	22.47	0.65	164	-2.52	-3.70
4	26.21	0.53	167	1.71	2.09
1	31.87	-1.36	117	0.19	0.35

is statistically significant at .05 level, two-tailed test; ***Impact significant at .01 level,

E

TAB

YEAR TWO READING TEST S
DIFFERENCES BETWE
(Per

	Scholarship Offered (1)	Control Group (2)	Scholarship Offer Impact (3)	(N) (4)	Scho
All students:					
Overall – Average	26.26	24.91	1.35	1199	2
Grade 3	21.12	22.67	-1.55	307	2
Grade 4	28.54	29.09	-0.55	341	2
Grade 5	26.98	24.84	2.14	313	2
Grade 6	28.86	24.19	4.67**	238	2
African-American students:					
Overall – Average	25.65	22.21	3.44**	497	2
Grade 3	23.54	23.90	-0.36	118	2
Grade 4	27.90	27.76	0.15	153	2
Grade 5	22.13	19.69	2.43	122	2
Grade 6	29.61	22.39	7.22**	104	2
Hispanic students:					
Overall – Average	25.37	25.20	0.17	612	2
Grade 3	19.03	19.16	-0.13	164	1
Grade 4	26.99	27.52	-0.53	164	2
Grade 5	26.78	25.03	1.75	167	2
Grade 6	30.05	27.91	2.14	117	3

See notes to Tables 5 and 18.

E-2

ORE IMPACTS AND IMPACT
N YEAR ONE AND TWO
ntile)

rship er)	Control Group Complier (6)	Switch to Private School (7)	(N) (8)	Impact Differences Between Year One and Two: For Scholarship Offered (9)	Impact Differences Between Year One and Two: For Scholarship Users (10)
96	24.14	1.83	1199	-0.31	-0.41
14	23.24	-2.10	307	4.00	5.55
53	27.28	-0.75	341	-2.24	-3.18
86	25.85	3.00	313	-1.89	-2.75
85	21.63	6.22**	238	-0.15	-0.29
07	21.56	4.51**	497	0.09	0.05
46	24.92	-0.46	118	6.18	8.24
41	26.22	0.18	153	-3.87	-4.99
63	21.08	3.44	122	-0.05	-0.22
68	21.48	8.20**	104	1.75	2.09
89	25.26	0.23	612	-0.86	-1.24
13	18.32	-0.18	164	2.29	3.45
71	24.42	-0.71	164	-2.40	-3.68
84	25.56	2.28	167	-1.64	-2.20
74	30.72	3.02	117	-0.08	-0.13

TAB

YEAR TWO MATH TEST SC
DIFFERENCES BETWE
(Per

	Scholarship Offered (1)	Control Group (2)	Scholarship Offer Impact (3)	(N) (4)	Sch
All students:					
Overall – Average	24.47	24.90	-0.43	1199	
Grade 3	20.65	20.88	-0.24	307	
Grade 4	23.48	26.31	-2.83	341	
Grade 5	27.71	28.76	-1.05	313	
Grade 6	26.54	25.46	1.08	238	
African-American students:					
Overall – Average	22.06	18.96	3.10	497	
Grade 3	22.25	18.19	4.05	118	
Grade 4	19.32	23.33	-4.01	153	
Grade 5	21.64	22.22	-0.58	122	
Grade 6	26.39	17.76	8.62**	104	
Hispanic students:					
Overall – Average	24.25	25.63	-1.37	612	
Grade 3	18.22	17.45	0.77	164	
Grade 4	25.22	23.72	1.50	164	
Grade 5	27.59	28.52	-0.93	167	
Grade 6	26.66	30.72	-4.07	117	

See notes to Tables 5 and 18.

E E-3

ORE IMPACTS AND IMPACT
N YEAR ONE AND TWO
entile)

olarship User (5)	Control Group Complier (6)	Switch to Private School (7)	(N) (8)	Impact Differences Between Year One and Two	
				For Scholarship Offered (9)	For Scholarship Users (10)
22.50	23.08	-0.58	1199	1.84	2.48
20.68	21.00	-0.32	307	3.51	5.08
9.01	22.86	-3.85	341	0.58	0.88
26.78	28.25	-1.48	313	4.92*	6.68*
24.08	22.64	1.44	238	3.81	4.91
22.32	18.25	4.07	497	2.31	2.94
22.27	17.06	5.20	118	4.84	6.68
7.80	22.84	-5.04	153	4.06	4.97
23.13	23.96	-0.83	122	5.93	8.08
28.04	18.24	9.80**	104	0.37	0.53
22.89	24.76	-1.87	612	0.74	0.85
16.50	15.42	1.08	164	0.92	1.56
22.54	20.53	2.01	164	-2.65	-3.72
25.64	26.86	-1.22	167	5.06	6.39
27.27	33.01	-5.74	117	0.47	0.82

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